WEST VIRGINIA UNIVERSITY

Undergraduate Catalog

1991-93 Bulletin

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1991-93 Undergraduate Catalog

The *1991-93 West Virginia University Undergraduate Catalog*, produced by WVU Publications Services, is a general source of information about course offerings, academic programs and requirements, expenses, rules, and policies. In order to reach the goals and fulfill the mission of the University, the courses, requirements, and regulations contained herein are subject to continuing review and change by the University of West Virginia Board of Trustees, University administrators, and the faculties of the schools and colleges. The University, therefore, reserves the right to change, delete, supplement, or otherwise amend the information, course offerings, requirements, rules, and policies contained herein without prior notice.

UNIVERSITY CALENDAR, 1991-92

First Semester, 1991-92 Year

August 22 & 23, Thursday and Friday ..... New Student Orientation
August 23, Friday ..... General Registration
August 26, Monday ..... First Classes, Late Registration Fee in Effect for All Students
August 30, Friday ..... Last Day to Register, Add New Courses, Make Section Changes, Change Pass/Fail and Audit
September 2, Monday ..... Labor Day Recess
September 9, Monday ..... Faculty Assembly
September 9, Monday ..... Rosh Hashannah, Day of Special Concern
September 18, Wednesday ..... Yom Kippur, Day of Special Concern
October 11, Friday ..... Mid-Semester
October 15, Tuesday ..... Mid-Semester Reports Due
November 1, Friday ..... Last Day to Drop a Class
November 23, Saturday, to December 1, Sunday, inclusive ..... Thanksgiving Recess
December 12, Thursday ..... Last Day to Withdraw From University
December 13, Friday ..... Last Day of Classes
December 16, Monday, to December 21, Saturday, inclusive ..... Final Examinations
December 22, Sunday, to January 9, Thursday, inclusive ..... Christmas Recess

Second Semester, 1991-92 Year

January 10, Friday ..... General Registration
January 13, Monday ..... First Classes, Late Registration Fee in Effect for All Students
January 17, Friday ..... Last Day to Register, Add New Courses, Make Section Changes, Change Pass/Fail and Audit
January 20, Monday ..... Martin Luther King, Jr. Birthday Recess
February 7, Friday (Not a Holiday) ..... West Virginia University Day
February 28, Friday ..... Mid-Semester
March 3, Tuesday ..... Mid-Semester Reports Due
March 14, Saturday, to March 22, Sunday, inclusive ..... Spring Recess
March 27, Friday ..... Last Day to Drop a Class
April 17, Friday ..... Friday Before Easter Recess
April 18, Saturday ..... Passover, Day of Special Concern
April 30, Thursday ..... Last Day to Withdraw From University
May 1, Friday ..... Last Day of Classes
May 4, Monday, to May 9, Saturday, inclusive ..... Final Examinations
May 11, Monday ..... Grade Reports for All Graduates Due in Dean's Office
May 11, Monday ..... Dean's Reports for All Graduates Due in Admissions and Records
May 16, Saturday ..... Alumni Day
May 17, Sunday ..... Commencement

The University calendar includes the academic year, which is composed of two semesters of approximately seventeen weeks each, and two summer sessions of six weeks each.

Summer Sessions 1992

May 20, Wednesday ..... Registration, First day of classes
May 21, Thursday ..... Late registration for six- week session
May 22, Friday ..... Last day to register, add new courses,or make section changes
May 25, Monday ..... Memorial Day recess
June 17, Wednesday ..... Last day to drop a class
June 29, Monday ..... Last day to withdraw from University
June 30, Tuesday ..... Last day of classes, Final exam
July 1, Wednesday ..... Registration , First day of classes
July 2,Thursday ..... Late registration
July 3, Friday ..... Independence Day recess
July 6, Monday ..... Last day to register
July 29, Wednesday ..... Last day to drop a class
August 10, Monday ..... Last day to withdraw from University
August 11, Tuesday ..... Last day of classes, Final exams

UNIVERSITY CALENDAR, 1991-92

First Semester 1992-93 Year

August 19, 20, 21, Wednesday, Thursday, Friday ..... New Student Orientation
August 21, Friday ..... General Registration
August 24, Monday ..... First Day of Classes
August 24, Monday ..... LateRegistration Fee in Effect for all Students
August 28, Friday ..... Last day to Register, Add New Courses, Make Section Changes
September 7, Monday ..... Labor Day Recess
September 14, Monday ..... Faculty Assembly
September 28, Monday ..... Rosh Hashannah (Day of special concern)
October 7, Wednesday ..... Yom Kippur (Day of special concern)
October 9, Friday ..... Mid-semester
October 13, Tuesday ..... Mid-semester reports due
October 30, Friday ..... Last day to drop class
November 3, Tuesday ..... Election day recess
November 21, Saturday, through November 29, Sunday ..... Thanksgiving recess
December 10, Thursday ..... Last day to withdraw fromUniversity
December 11, Friday ..... Last day of classes
December 14, Monday, through December 19, Saturday ..... Final exam week
December 20, Sunday, through January 6, Wednesday, inclusive ..... Christmas recess

Second Semester , 1992-93 Year

January 7, 8, Thursday and Friday ..... General Registration
January 11, Monday ..... First day of classes, Late Registration Fee in Effect for all Students
January 15, Friday ..... Last day toRegister, Add New Courses, Make Section Changes
January 18, Monday ..... Martin Luther King Birthday Recess
February 7, Sunday (Not a holiday) ..... West Virginia University Day
February 26, Friday ..... Mid-semester
March 2, Tuesday ..... Mid-semester reports due
March 13 Saturday through March 21, Sunday ..... Spring Recess
March 26, Friday ..... Last day to drop class
April 6, Tuesday ..... Passover (Day of Special Concern)
April 9, Friday ..... Friday before Easter Recess
April 29, Thursday ..... Last day to withdraw fromUniversity
April 30, Friday ..... Last day of classes
May 3, Monday through May 8, Saturday ..... Final exam week
May 10, Monday ..... Grade reports for all graduates due in dean's office
May 11, Tuesday ..... Dean's reports on graduates due in Admissions and Records
May 15, Saturday ..... Alumni Day
May 16, Sunday ..... Commencement

Summer Sessions 1993

May 19, Wednesday ..... Registration, First day of classes
May 20, Thursday ..... LateRegistration Fee in Effect for First-Week Session for All Students
May 21, Friday ..... Last Day to Register for First Six-Week Session, Last Day to Add Courses or Make Secion Changes
May 31, Monday ..... Memorial Day Recess
June 16, Wednesday ..... Last Day to Drop a Class
June 29, Tuesday ..... Last Day to Withdraw
June 30, Wednesday ..... Last day of classes, Final exam
July 1, Thursday ..... Registration , First day of classes
July 2, Friday ..... Late Registration Fee in Effect for Second Six-Week Session
July 5, Monday ..... Independence Day Recess
July 6, Tuesday ..... Last Day to Register for Second Six-Week Session, Add Courses or Make Section Changes
July 29, Thursday ..... Last day to Drop a Class for Second Six-Week Session
August 11, Wednesday ..... Last Day to Withdraw for Second Six-Week Session
August 12, Thursday ..... Last Day of Classes, Final Exams

West Virginia University is an equal opportunity/affirmative action institution. The University does not discriminate on the basis of race, sex, age, handicap, veteran status, religion, sexual orientation, color, or national origin in the administration of any of its educational programs or activities or with respect to admission and employment. The University neither affiliates knowingly with nor grants recognition to any individual, group, or organization having policies that discriminate on the basis of race, sex, age, handicap, veteran status, religion, sexual orientation, color, or national origin, as defined by the applicable laws and regulations. Further, faculty, staff, students, and applicants are protected from retaliation for filing complaints or assisting in an investigation under the University's Equal Opportunity/Affirmative Action Plan. Inquiries regarding the University's non-discrimination policy may be directed to the Special Assistant to the President for Social Justice, West Virginia University.

-Office of the President.

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WEST VIRGINIA UNIVERSITY

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Kenneth Showalter, Eberly Professor of Chemistry.
George W. Weinstein, Jane McDermott Shott Chair of Ophthalmology.

West Virginia University is a member of the North Central Association of Colleges and Schools. The University's educational programs are accredited by the North Central Association and by the appropriate accreditation agencies for professional programs.

Part 1 General Information

West Virginia University combines many of the advantages of a large institution with those of a small one. It is both a comprehensive university offering 176 degree programs from the bachelor's through the doctoral level and a decentralized group of 15 colleges and schools on two campuses in Morgantown, an arrangement which helps maintain the friendly, informal atmosphere of smaller institutions. The Personal Rapid Transit (PRT) System, which was built by the U.S. Department of Transportation as a national research and demonstration project, connects the campuses.

With 20, 854 students in the fall semester of 1991, 1271 full- time faculty, and 2674 administrative staff, WVU is large enough to support academic diversity. WVU students come from all 55 West Virginia counties, 49 other states, and 74 foreign countries. Over the years, 23 students from the University have received Rhodes Scholarships to continue their studies at Oxford University.

West Virginia University is one of only 24 state universities in the nation that serve as both the comprehensive and land-grant institutions in their states. They are called land-grant institutions (there are 72) because the Congressional act establishing them in 1862 gave federally owned land to each state, which then sold the land and used the funds to begin a college offering programs in agriculture and engineering. Since its founding in 1867, WVU has developed into the center of graduate and professional education, research, and extension programs in West Virginia. Coal and energy are a major focus of University research because of WVU's location in the heart of the eastern coal fields. In July, 1989, the University became a part of the University of West Virginia, under the governance of the University of West Virginia Board of Trustees.

The Morgantown campuses contain 140 buildings on over 1,000 acres; libraries with over 1.5 million books, over 1.4 million microforms and microfilms, and over 9,000 periodicals. Through the West Virginia Network for Educational Telecomputing, five computer sites utilize an IBM 3081KX mainframe running MVS/XA 2.2 and JES2 to support remote and network job entry, an IBM 3081D running VM/SP 5.0 to support the VM/XA SP2 operating system, and DEC VAX 8650, 8550, and 11/780 super minicomputers in a cluster running VMS 5.1.

Our campuses are changing rapidly. On Evansdale, three new buildings dedicated to technology (the new College of Mineral and Energy Resources, the new Engineering Research Building, and the new Center for Energy Research) and the new Mary Babb Randolph Cancer Center are completedand operational. Downtown, the College of Business and Economics has moved into its new building on the site of the old Mountaineer Field.

Branches include the Charleston Division of the WVU Health Sciences Center, Wheeling Division of the School of Medicine, Potomac State College at Keyser, West Virginia University at Parkersburg, and five off-campus graduate centers at Jackson's Mill near Weston, in Parkersburg, at Potomac State College, Shepherd College in the eastern panhandle, and West Liberty State College in the northern panhandle.

West Virginia University operates eight experiment farms in Hardy, Jefferson, Monongalia, Monroe, and Preston counties; five experiment forests in Monongalia, Preston, Randolph, and Wetzel counties; a geology camp in Greenbrier County; and the State 4-H Camp and a museum of mid-nineteenth century life at Jackson's Mill, the boyhood home of Confederate General Stonewall Jackson and a site listed in the National Register of Historic Places.

Potomac State College's transfer programs, designed to conform to programs in the WVU lower division, provide the freshman and sophomore years in the liberal arts and sciences and pre-professional studies in agriculture, business and economics, computer science, dentistry, education, engineering, engineering of mines, forestry, journalism, law, medical technology, medicine, music, nursing, pharmacy, physical education, physical therapy, social work, and veterinary medicine. Occupational

programs at Potomac State College, which lead to the Associate in Applied Science degree, include general business, accounting, industrial management, small business administration, agriculture, computer programming, electronics technology, engineering technology, horticulture technology, and secretarial studies. Certificate programs are offered in surveying technology and computer equipment operations.

Government and Organization of WVU

The University of West Virginia Board of Trustees is vested by law with the authority for the control and management of the University and all other institutions of the University of West Virginia. The governor appoints the members of the board who serve with the chairs of the Advisory Council of Faculty, the Advisory Council of Classified Staff, and the Advisory Council of Students, the Chancellor of the Board of Directors of the State College System, and the State Superintendent of Schools.The University President, appointed by the Board of Trustees, is the chief executive officer of the University.

The University's Board of Advisors reviews all WVU proposals involving its mission, academic programs, budget, capital facilities, institution-wide personnel policies, and other matters requested by the president. The Board of Advisors also serves as the search and screening committee for new university presidents under guidelines established by the Board of Trustees (in this role, the Board appoints three additional WVU faculty and the Trustees appoint three additional members to comprise a 17- member committee).

The Faculty Senate is the vehicle for faculty participation in the governance of the University. It is a legislative body with original jurisdiction over all matters of academic interest and educational policy that concern the entire University or affect more than one college or school. The senate's decisions are subject to review and approval by the President and the Board of Trustees. Senators are elected by members of the University faculty to represent their colleges and other constituencies. One senator represents twenty members of the University faculty. The senate normally meets the second Monday of each month.

The senate elects a faculty chair each year to preside over the meetings of the senate and its executive committee. Three faculty members also serve on the Vice Presidents' Advisory Committee for Promotion and Tenure. The President meets regularly with the cabinet. He meets monthly with the Faculty Senate Executive Committee, the Staff Council, and Student Administration. The University Faculty Assembly includes the president as presiding officer, vice presidents, academic deans, associate deans, professors, associate professors, assistant professors, and instructors holding appointments on a full-time basis. The assembly meets once a year.

West Virginia University also has a tradition of strong student administration that touches all aspects of student life and represents student opinion to the administration and faculty. Student administration has three main units: the Executive Branch, the Board of Governors, and the Judicial Board. Students also serve on University-wide committees and on the Mountainlair Advisory Council. Non-teaching employees are represented by the Staff Council and Laborers' International Union Local 814, AFL/CIO. The Council consists of twelve members elected by their fellow employees in six occupational groups.

Morgantown Area

Greater Morgantown has a population of 47,000; Monongalia County, 75,000. WVU is the largest single employer in the county.Located on the east bank of the Monongahela River, which flows north to nearby Pittsburgh, Morgantown is situated on rugged terrain in the Appalachian highlands. The altitude of the city varies from 800 to 1,150 feet above sea level, and the surrounding hills rise eastward to Chestnut Ridge to reach an altitude of 2,600 feet just ten miles from the city. The area's temperate

climate is marked by four distinct seasons of about equal length. Morgantown averages 40 inches of precipitation a year. Autumn is beautiful with the hills turning red, orange, and yellow as the leaves change color.

A north-south interstate highway (I-79) is one mile west of Morgantown. U.S.19 and U.S.119 pass through Morgantown in a north-south direction. U.S. 48, a four-lane, east-west highway, links I-79 at Morgantown to I-81 in the Cumberland/Hagerstown, Maryland, region.

Because of WVU's intellectual resources, the Morgantown area is a major research center in the Appalachian region. Four federal agencies have research facilities in the area: Department of Health and Human Services (Appalachian Laboratory for Occupational Safety and Health), Forest Service (Forestry Sciences Laboratory), Morgantown Energy Technology Center of the U.S. Department of Energy, and Soil Conservation Service (West Virginia headquarters).

At Hart Field in Morgantown, the Concurrent Engineering Research Center (CERC) unites town and gown in a new, high tech effort. Located in the Airport Research Park, CERC was established by the U.S. Department of Defense in 1988. The General Electric Company and an academic consortium of five institutions (including West Virginia University, Carnegie Mellon University, North Carolina State University, Rensselaer Polytechnic Institute, and Stanford University) have joined forces for research conducted by full- time staff employees, faculty, and graduate students with expertise in the areas of statistics and computer science, physics, chemistry, engineering, and mathematics.

The College of Engineering has received an endowment from Wheeling-Nisshin Steel Ltd. to support faculty activities directed toward solving some of the problems of West Virginia's industry. The Wheeling-Nisshin Distinguished Speaker Convocations, held biannually, will emphasize the global nature of engineering and the social, economic, and political aspects of technology.

Housing and Residence Life

The University owns nine residence halls with a capacity of approximately 3400. In addition, there are four apartment complexes owned by WVU and available primarily to graduate students. Privately owned residence halls, apartment complexes, mobile home parks, and fraternity and sorority houses also provide accommodations. The University Housing and Residence Life Office, G-18 Towers (phone 304/293-2811), provides information concerning University-owned housing. The Office of Student Life in Moore Hall provides information concerning privately owned, off-campus housing (phone 304/293-5611).

Listings for privately owned rentals change daily, so students should visit the Office of Student Life to see what is available and make their own arrangements with landlords. Students are encouraged to select quality student housing accommodations. Good housing is plentiful, both in residence halls and apartments. Because of the hilly terrain, parking is limited on the WVU campuses and in the city.

Part 2 Admission

West Virginia University's first concern is to provide a quality education to all students. As such, the basic goal of the University's admission policy is to select applicants who will succeed academically and socially. If space is limited, the best prepared students are admitted.

As a land-grant university, West Virginia University has as its primary obligation the people of its own state. Therefore, if you live in West Virginia, you are given preference for admission to the University or to the program of study that you have chosen. If you live elsewhere, a superior record from high school or from a previous college experience earns you similar consideration. All applications are reviewed individually.

You may get an application for admission at any West Virginia high school, or you may write to this address:

Office of Admissions and Records
Box 6009
Morgantown, WV 26506

The Office of Admissions and Records has two telephone numbers:

304-293-2121 and 1-800-344-WVU1.

General Credit Requirements

Your application must include an official transcript of your high school record and proof of measles and rubella immunization. To be considered for freshman admission, you must present the following high school credits:

Required Units

Units (Years)

4 English (including courses in grammar, composition, literature)
3 Social studies (including U.S. history)
2 Mathematics (Algebra 1 and higher; to qualify for the Math Placement exam, Algebra 2 is mandatory)
2 Laboratory science (biology, chemistry, physics, or other courses with a strong laboratory science orientation)

It is strongly recommended that you complete two units of a foreign language and three units of mathematics (including two units of algebra and one unit of geometry).

Elective Units

Areas such as computer science, fine arts, humanities, and typing are recommended.

Some colleges and programs have admission standards that exceed the minimal requirements listed above. For example, pre-computer science in the College of Arts and Sciences and programs in the College of Engineering and the College of Mineral and Energy Resources require two units of algebra, one unit of geometry, and one-half unit of trigonometry for a total of three and one-half units of mathematics.

Freshman Admissions

Complete your part of the admission form and return it to your high school counseling office. Your counselor will complete the form and mail it with the official record of your high school studies to WVU. If you are still in high school, you should include the list of courses that you are currently taking. When you graduate, ask your school to send your completed record to the Office of Admissions and Records.

Grade Averages and Test Scores

The grades that you earn in high school, your grade-point average at graduation, and the scores that you receive on comprehensive tests are the major factors used to determine your admission to WVU. We do not decide to admit anyone until we see ACT (American College Testing) or SAT (Scholastic Aptitude Test) scores.

As a high school graduate from West Virginia, you are eligible for admission if you have a 2.0 grade-point average and either a composite enhanced ACT score of 19 or a total SAT score of 720. If you live in another state, you are eligible for admission if you have a 2.25 overall grade-point average and either an enhanced ACT composite score of 20 or a total SAT score of 800. Normally, if you have the credit requirements, the grade-point average, and the test score, you are admitted without question if space is available. As space becomes limited, the better qualified applicants receive first consideration. If you have a lower average or a lower test score (but not lower for both), the Admissions Review Committee reviews your application. You may be assured that each application is reviewed individually and given consideration.

GED

If you earned a General Education Development (GED) diploma less than five years before your admission request, you must present ACT or SAT scores with your application, must complete course requirements, and must provide a copy of your high school transcript. If you received a GED diploma more than five years ago, we do not require the ACT or SAT scores. In either case, you must send us whatever high school record you have completed.

If it is more than five years since you graduated from high school or earned your GED diploma, and you have not attended another college, we may, at our discretion, waive some of the admission requirements.

Special Reviews

Some people are very talented in a specific field such as art or music; however, their high school records may be lacking academically. We are permitted to admit up to five percent of each freshman class because of this kind of special talent. If you have aptitude or talent in art, music, writing, dramatics, or athletics, we may be able to admit you in this special category, if you meet our other requirements. We also, on an individual basis, give special consideration to the educationally disadvantaged.

High School Specials

If you are now in high school, have completed your junior year, and have at least a 3.0 grade-point average, you may register for up to six credit hours a semester at WVU. You must have the permission of your high school counselor and your parents. These courses allow you to get an early start on your college studies. This program is available to commuting students only.

Early Admission

A select number of high school seniors are academically and socially prepared to enter college before graduation from high school. WVU accepts a limited number of these high achieving, early maturing persons as full-time students in its Early Admission Program.

If you have completed your junior year in high school with at least a GPA of 3.5 and a 26 enhanced ACT composite or 1000 on the SAT, you may apply. Also, you must have completed all requirements for graduation from high school except senior English. Special exceptions may be made by the University, with the approval of the high school, for students who have not completed other graduation requirements if admission is considered appropriate in the individual case.

You will be asked to submit an admission application with all of the academic records required for freshmen as listed above. You must have your principal or

guidance counselor submit a letter supporting your application and assuring us that you will graduate with your high school class following one year on our campus. Your parents or guardian must also submit a letter of support for your application.
After the above requirements are met, you will be interviewed for the Early Admissions Program. Accepted students are admitted as full-time students with all of the rights and privileges offered other students.

Veterans

Veterans are not subject to the same requirements as recent high school graduates. We admit veterans with less than the minimal requirements. If you want information about the various forms of aid for veterans, contact a financial aid counselor at the Student Financial Aid Office in the Mountainlair or write to:

Financial Aid Office
P.O. Box 6004
Morgantown, WV 26506-6004

Aid to dependents of totally disabled veterans is also available.

If you have at least one year of active military service, you may get credit for physical education courses (P.E. 1 and 2) and for military science under our advanced placement program.

Health Sciences Center

The Admissions and Records Office at the Health Sciences Center takes care of applications for the four schools at the Center. The *WVU Health Sciences Center Catalog* contains complete information about the programs in dentistry, medicine, nursing, and pharmacy. If you have additional questions, you may write to:

Admissions and Records
1170 Health Sciences Center North
West Virginia University
Morgantown, WV 26506

or call 304-293-3521.

If you are an applicant for freshman admission, you should use the regular application (except for dental hygiene) and apply for pre-health sciences programs. Dental hygiene applicants apply directly to HSC.

Transfer Students: Intrauniversity

If you are a student at Potomac State College or at WVU at Parkersburg, you may transfer to the Morgantown campus. Both colleges are part of West Virginia University, and your record at either school is a part of your University record. Seventy-two credit hours from Potomac State or Parkersburg can apply toward a WVU baccalaureate degree. You must meet the standards for a student in good standing at the University, and you must meet the requirements of the program that you wish to enter.

If you want to transfer to WVU at Morgantown before completing two semesters at Potomac State or Parkersburg, you will need to have been eligible for freshman admission.

Other Accredited Institutions

Admission as a transfer student is available if you have completed some post-secondary studies at an accredited college or institution. To be eligible to enroll as a transfer student at the University, you must have at least a 2.0 grade-point average in all college work attempted. In addition, if you have fewer than 12 transferable credit hours, you must meet freshman admission standards (see previous section). Some individual programs have differing course requirements and higher grade-point average requirements than those stated here.

If you want to transfer from another college or university, you must submit a complete application for undergraduate admission. At least two months before the start

of the semester in which you wish to enroll, arrange for the submission of an official transcript of all college work attempted to date. The Office of Admissions and Records can only accept transcripts sent directly from registrars' offices and cannot accept transcripts issued to you. An official transcript covering subjects taken after your application to WVU must be sent before final admission is granted. If you have fewer than 29 transferable credit hours, you will be ranked as a freshman and must submit ACT or SAT scores and a high school transcript as part of your application. Evaluation of transcripts for transfer of credit is furnished only after receipt of complete official transcripts and admission to West Virginia University.

If you are transferring more than 58 credit hours, you must meet the entrance requirements for the specific program that you wish to enter. Individual consideration is given to a limited number of students with more than 58 transferable hours who do not meet specific program requirements.

Credits and grades for those baccalaureate-level courses completed at any institution in the West Virginia state system of higher education may be transferable toward a bachelor's degree, if appropriate to that degree. No more than 72 hours of **credit** and **grades** earned for courses completed at community colleges or branch colleges in the West Virginia system may transfer toward a bachelor's degree, if appropriate to that degree.

Credits, though not grades, are transferable from institutions outside the West Virginia system for baccalaureate-level courses in which you earned a grade of C or higher, if course content is appropriate to a WVU degree. Transfer credits from two-year community colleges and junior colleges outside of the West Virginia system are limited to 72 hours of lower-division courses. All colleges must be accredited by the North Central Association of Colleges and Schools or by other regional accrediting associations accepted by West Virginia University.

International Admission

The Office of Admissions and Records has additional requirements for international students for English proficiency and for handling transcripts.

If your native language is not English, you must take the Test of English as a Foreign Language (TOEFL) and ask Educational Testing Service to submit your scores to us. We require a score of at least 550. If your TOEFL score is less than 550, we can admit you provisionally to certain programs while you complete our intensive English program.

Credentials for International Students

The Office of Admissions and Records needs complete, original official records of all studies completed, including secondary school, college, university, or technical school; copies of originals are acceptable if they are certified copies.

We also need official English translations of all such records, which should include the following items:

- Complete dates of attendance;
- Identification of each subject;
- Total number of hours in a week of classes for each subject;
- Total number of weeks in a semester or term;
- Final grade for each subject for each year of study;
- Actual credits earned for each subject;
- Class, division, or rank achieved;
- Personal biographical information;
- An explanation of the institution's grading system;
- Certification of degrees and awards.

Other Admission Categories
Transient Students Coming to WVU

If you want to take a course at WVU and have the credit transferred to another college or university, you will need a statement of good standing or your official transcript from the last college you attended.

Readmission

If you leave the University for at least one complete semester, you are required to submit an application for readmission to the Office of Admissions and Records. Decisions on readmission are based on your West Virginia University record together with that earned at any other institution attended after leaving WVU. If you are in good standing upon review of these records, you are eligible for readmission.

If you are transferring credit from institutions outside the West Virginia system of higher education, WVU will accept credit only for courses in which you earned a grade of C or higher, provided the other conditions have been met.

If you have been suspended from the University, you must be reinstated by the dean of the school or college to which you wish to be admitted before you apply for readmission.

If you have been suspended for academic reasons and take courses at other institutions during your suspension, you cannot automatically transfer these courses to WVU upon readmission. You must achieve an overall GPA of 2.0 (C average or better for at least 12 hours) after your readmission in order to have the appropriate credit entered on your record. The dean of your college or school and your adviser must certify that these conditions have been met.

Second or Multiple Degrees
WVU Students

To earn a second bachelor's degree, you must earn at least 30 credits beyond the requirements for your first degree. You must satisfy all requirements, departmental and otherwise, for the second degree. You cannot receive a second bachelor's degree if you have not met the University's residence requirements (see "Requirements as to Residence").

If you want to earn two baccalaureate degrees at the same graduation date, you must satisfactorily complete at least 158 credits and meet all requirements, departmental and otherwise, of both degree programs. Furthermore, you must provide the Office of Admissions and Records written proof that you do, in fact, have the approval of both colleges or schools.

Transfer Students

If you want to earn a second bachelor's degree, you must submit an undergraduate application and official transcripts from all institutions previously attended. The Office of Admissions and Records can only accept transcripts sent from the registrars' offices of these institutions and cannot accept transcripts issued directly to you. In general, admission is granted on the basis of a cumulative grade-point average of at least 2.0 in the first baccalaureate degree. Selected majors, such as engineering, business and economics, and education, have higher requirements. After you are admitted, the individual department evaluates your transcript and applies any appropriate credit from the first baccalaureate toward completion of the second.

Post-Baccalaureate Students

Students with one or more earned degrees from an approved college or university (including WVU) who want to enroll for undergraduate credit may be admitted as post-baccalaureate students. Students admitted in this category are not working toward a graduate degree, and credit earned while under this classification is limited to undergraduate credit. Post-baccalaureate students enrolling in undergraduate courses are

assessed undergraduate fees. Candidates for admission to this classification who are not graduates of WVU must submit an undergraduate application and an official transcript from the institution granting the latest degree. The Office of Admissions and Records can only accept transcripts sent from the registrar's office of the institution previously attended and cannot accept transcripts issued directly to the student. WVU students must apply with an undergraduate application.

Special Students

If you are not a candidate for a degree, or if you do not meet the requirements to enter a degree program, you may be admitted as a special student. You must submit a complete application and official transcripts from all institutions previously attended.

Academic Forgiveness Policy

The academic forgiveness policy allows you a second chance if you were unsuccessful in your initial enrollment in higher education.

If you have not been enrolled at any academic institution of higher learning for at least five years, you may be eligible for admission or readmission to WVU under the academic forgiveness policy.

The conditions and rules of the academic forgiveness policy are as follows:

a. Admission to WVU under the academic forgiveness policy is conditional upon satisfying the above stated non-enrollment period. In addition, a recommendation that the student be admitted under the academic forgiveness policy must be submitted by the dean of the college or school that the student plans to enter, and the recommendation must be approved by the Office of the Vice President for Academic Affairs.

b. Upon admission to WVU under this policy, the student will be credited with the hours earned for courses completed with a grade of D or higher.

c. Grades earned during any prior enrollment period will not be counted for purposes of calculating the student's grade-point average, but grades earned will remain on the student's permanent record.

d. The student must complete all course work required to meet the college's or school's requirements for graduation, but under no circumstances after the student has been admitted under the academic forgiveness policy shall the student complete fewer than 64 credit hours prior to earning a degree.

Measles and Rubella Immunization

If you are a new freshman or transfer student, you are required to provide proof of measles and rubella immunization. This requirement can be met by an immunization record signed by a physician or an official copy of your permanent high school health record with a report of the required immunizations. One of these documents must be sent to WVU before enrollment. If you want exemption from this requirement for religious or medical reasons, contact the Office of Admissions and Records for information about filing for an exemption. Failure to provide your immunization record may prevent you from further registration.

Part 3 Academic Information

Degree Programs Offered by WVU

Program	Bachelor	Master	Doctorate Professional
College of Agriculture and Forestry			
Agricultural Biochemistry		M.S.	
Agricultural Economics		M.S.	
Agricultural Education	B.S.Agr.	M.S.	
Agricultural Microbiology		M.S.	
Agricultural Sciences			Ph.D.
Agriculture		M.Agr.	
Agronomy		M.S.	
Animal and Veterinary Sciences	B.S., B.S.Agr.		M.S.
Entomology		M.S.	
Family Resources	B.S.Fam.Res.		M.S.
Forest Resources Management	B.S.F.		
Forest Resources Science			Ph.D.
Forestry		M.S.F.	
Horticulture		M.S.	
Landscape Architecture	B.S.L.A.		
Plant Pathology		M.S.	
Plant and Soil Sciences	B.S.Agr.		
Recreation and Parks Management	B.S.R.	M.S.	
Resource Management	B.S., B.S.Agr.		
Wildlife Management		M.S.	
Wildlife Resources	B.S.		
Wood Industries	B.S.F.		
College of Arts and Sciences			
Biology	B.A.	M.S.	Ph.D.
Chemistry	B.A., B.S.	M.S.	Ph.D.
CommunicationStudies	B.A.	M.A.	
ComputerScience	B.S.	M.S.	Ph.D.
Economics	B.A.		
English	B.A.	M.A.	Ph.D.
Foreign Languages	B.A.	M.A.	
Geography	B.A.	M.A.	
Geology	B.A., B.S.	M.S.	PhD.
History	B.A.	M.A.	PhD.
Interdepartmental Studies	B.A.		
Mathematics	B.A.	M.S	Ph.D.
Philosophy	B.A.		
Physics	B.A., B.S.	M.S.	Ph.D.
Political Science	B.A.	M.A.	Ph.D.
Psychology	B.A.	M.A.	Ph.D.
Public Administration		M.P.A.	
Sociology and Anthropology	B.A.	M.A.	
Statistics	B.S.	M.S.	
Board of Regents Bachelor of Arts Degree			
Board of Regents	B.A.		

(Intended for older students who wish to resume and complete their college studies. Detailed information available from the Coordinator, Board of Regents B.A. Degree Program, Student Services Center, West Virginia University, Morgantown, WV 26506.)

College of Business and Economics

Accounting	B.S.B.Ad.		
Business Administration	B.S.B.Ad.	M.B.A.	
Business Management	B.S.B.Ad.		
Economics	B.S.	M.A.	Ph.D.
Finance	B.S.B.Ad.		
Industrial Relations		M.S.	
Marketing	B.S.B.Ad.		
Professional Accountancy		M.P.A.	

College of Creative Arts

Art	B.A.	M.A.	
Music	B.M.	M.M.	D.M.A., Ph.D.
Theatre	B.F.A.	M.F.A.	
Visual Art	B.F.A.	M.F.A.	

School of Dentistry

Dental Hygiene	B.S.	M.S.	
Dentistry			D.D.S.
Endodontics		M.S.	
Orthodontics		M.S.	

College of Engineering

Engineering		M.S.E.	Ph.D.
Aerospace Engineering	B.S.A.E.	M.S.A.E.	
Chemical Engineering	B.S.Ch.E.	M.S.Ch.E.	
Civil Engineering	B.S.C.E.	M.S.C.E.	
Computer Engineering	B.S.Cp.E.		
Electrical Engineering	B.S.E.E.	M.S.E.E.	
Industrial Engineering	B.S.I.E.	M.S.I.E.	
Mechanical Engineering	B.S.M.E.	M.S.M.E.	
Occupational Health and Safety Engineering		M.S.	

College of Human Resources and Education

Education			Ed.D.,C.A.S.
Counseling		M.A.	
Education Administration		M.A.	
Educational Psychology		M.A.	
Elementary Education	B.S.E.Ed.	M.A.	
Reading		M.A.	
Rehabilitation Counseling		M.S.	
Secondary Education	B.S.S.Ed.	M.A.	
Special Education		M.A.	
Speech Pathology and Audiology	B.S.	M.S.	
Technology Education		M.A.	

Interdisciplinary Programs

Genetics and Developmental Biology		M.S.	Ph.D.
Liberal Studies		M.A.L.S.	
Reproductive Physiology		M.S.	Ph.D.

Perley Isaac Reed School of Journalism

Journalism	B.S.J.	M.S.J.

College of Law

Law	J.D.

School of Medicine

Anatomy		M.S.	Ph.D.
Biochemistry (Medical)		M.S.	Ph.D.
*Biomedical Sciences			Ph.D.
Medical Technology	B.S.	M.S.	
Medicine			M.D.
Microbiology (Medical)		M.S.	Ph.D.
Pharmacology and Toxicology		M.S.	Ph.D.
Physical Therapy	B.S.		
Physiology (Medical)		M.S.	Ph.D.

*Awarded under the auspices of the degree-granting authority of WVU, but in cooperation with the Basic Sciences Departments of Marshall University School of Medicine.

College of Mineral and Energy Resources

Engineering of Mines	B.S.E.M.	M.S.E.M.	
Mineral and Energy Resources		M.S.	Ph.D.
Mineral Engineering			Ph.D.
Mineral Processing Engineering	B.S.		
Petroleum Engineering	B.S.Pet.E.	M.S.Pet.E.	

School of Nursing

Nursing	B.S.N.	M.S.N.

School of Pharmacy

Pharmaceutical Sciences		M.S.	Ph.D.
Pharmacy	B.S.Pharm.		D.Pharm.**

**Pharm.D. program approved pending funding authorization via special legislative appropriation.

School of Physical Education

Education			Ed.D., C.A.S.
Community Health Education		M.S.	
Physical Education	B.S.P.Ed.	M.S.	
Sport and Exercise Studies	B.S.P.Ed.		
Safety Studies		M.S.	

School of Social Work

Social Work	B.S.W.	M.S.W.

Academic Common Market

West Virginia provides its residents opportunity, through the Academic Common Market (ACM) and through contract programs, to pursue academic programs not available within the state. Both programs permit West Virginians to enter out-of-state institutions at reduced tuition rates. Contract programs have been established for study in optometry, podiatry, and veterinary medicine. The ACM provides access to numerous graduate and undergraduate programs. The programs are restricted to West Virginia residents who have been accepted for admission to one of the specific programs at designated out-of-state institutions. Through reciprocal agreement, WVU allows residents of states within the ACM to enroll in graduate and undergraduate programs on an in-state tuition basis. Further information may be obtained through the Assistant Vice President for Curriculum and Instruction, Stewart Hall, West Virginia University, P.O. Box 6001, Morgantown, WV 26506-6001. Application must be made through the higher education authority of the state of residence. West Virginia residents should apply through the University of West Virginia Board of Trustees, 950 Kanawha Boulevard East, Charleston, WV 25301.

Baccalaureate Degrees

Student Responsibility

As a student, you are responsible for your academic well-being. Specifically, you are responsible for knowing your scholastic standing as it relates to the published regulations and standards of West Virginia University. This responsibility includes the regulations of your college or school and the regulations of the department or division in which you are earning a degree. In order to graduate, you must go to your academic dean's office and complete an application for graduation and diploma. File your application during the first month of the semester or summer session in which you expect to graduate.

Academic Advising

When you enter West Virginia University, you are assigned an academic adviser. Your adviser assists you as you prepare your schedule, assigns classes as required by your degree program, and certifies your study list to the Director of Admissions and Records. Your adviser is also expected to give you advice and sympathetic guidance. You are expected to meet with your adviser to discuss your academic problems.

If you are a student in Arts and Sciences, Human Resources and Education, or Social Work, you are admitted to a pre-program in a particular major. You remain in a pre-program and are advised by a special academic adviser until you fulfill all requirements for admission to the degree program.

You may choose to enter other pre-programs. Normally, these programs require you to complete 30-58 credits before you are admitted to a degree program. If you select one of these pre-programs, you are advised through the University Advising Center. The Center has professional advisers for the following areas: pre-business and economics, pre-journalism, pre-medical technology, pre-nursing, pre-pharmacy, and pre-physical therapy.

Students who are undecided on a career field may enroll in general studies. If you choose this option, you can explore several career and academic options before you make a final choice. While you explore these different areas, you enroll in courses that fulfill general University requirements for graduation and also provide a solid liberal arts foundation. You can be a general studies student for four semesters or until you are admitted to a degree program. If you select general studies, your adviser will be located in the University Advising Center. The Center staff also advises part-time and special (non-degree) students.

Regulations Affecting Degrees

All degrees are conferred by the University of West Virginia Board of

Trustees as recommended by the faculties of the various colleges and schools. A degree is granted at the end of the semester or summer session in which you complete the requirements for that degree.

You become eligible to graduate when you complete the requirements of the University and your college or school that were in effect at the time you first registered at that college or school. You have seven years after your first registration to complete the requirements. If you do not, you will have to meet the requirements of a later catalog--one that is no more than seven years old when you complete your studies. With the consent of your adviser and your dean, you may choose to meet the conditions published in a later catalog.

Students must observe any program changes that are enacted by the University of West Virginia Board of Trustees or by local, state, or federal law.

West Virginia University policy dictates that, in view of their professional responsibilities to the general public, the faculty of a professional school may recommend to the president of the University, in writing, that a student be removed from its rolls. The recommendation of the faculty must indicate that the student is not fit to meet the qualifications and responsibilities of the profession.

West Virginia University will not confer a degree nor issue a transcript to any student until payment of all tuition, fees, and other indebtedness to any unit of the University is made.

Credits Required

Each degree program is based upon a combination of required courses and electives. Certain University requirements are listed below. In addition, the various colleges and schools determine their own credit requirements and course grade averages for graduation. Total credits vary from 128 to 145. Required grade averages range from 2.0 to 2.5. The determination to count ROTC courses as free electives or toward fulfillment of Liberal Studies Program requirements is the prerogative of the dean of the college awarding the degree.

No more than three credit hours of ROTC may count toward fulfillment of the LSP requirement in each cluster area.

Liberal Studies Program (LSP)

The requirements of the LSP apply to all students who entered WVU as freshmen after August 15, 1988 or students transferring to WVU who entered any institution of higher education after August 15, 1988. All other students may choose to fulfill either the requirements of the LSP or of the previous core curriculum.

Preface

West Virginia University believes that its baccalaureate graduates, in addition to developing competence in major and minor fields of study, should be broadly educated. The University's goals are: to prepare its graduates to integrate knowledge from a wide variety of fields; to value the continuing search for breadth of knowledge; to be creative and open to new ideas; and to be able to deal constructively with the technological, cultural, and social changes that challenge us in our own country and the world. In order that West Virginia University graduates may be able to adapt to changing circumstances throughout a lifetime of learning, the Liberal Studies Program (LSP) helps students to learn to acquire knowledge, to make critical judgments in a logical and rational manner, and to communicate their findings clearly. The program encourages students to appreciate the past; to value lasting traditions; to accept their responsibilities as citizens of a free society; to respect the traditions, values and individuality of fellow human beings; to broaden their knowledge about people different from themselves, whether by reason of nationality, age, class, gender, or race; and to understand the basic concepts and principles of mathematics and the sciences.

Therefore, West Virginia University baccalaureate graduates are expected to

possess knowledge and experience in three broad clusters of learning: the arts and humanities, the social and behavioral sciences, and mathematics and natural sciences. In the arts and humanities, students come to understand and appreciate the human experience. In the social and behavioral sciences, students develop an awareness of personal, interpersonal, and societal forces that shape individual lives. In mathematics and the natural sciences, students acquire an understanding of the unifying principles and methods of science and their application to natural phenomena. University graduates also are expected to be able to communicate effectively in the written English language and to possess skills in post-high-school mathematics.

Program Components

West Virginia University Liberal Studies Program requirements for all students who receive the baccalaureate degree are divided into a skills component and a distribution component. These are described below.

Skills Requirements

Writing: a. All students must successfully complete English 1 and 2. This requirement is in addition to the Cluster A requirements described in Section B below.
b. All students must successfully complete at least one course that requires a substantial writing component and in which the grade is partially determined by writing skills. These courses will be identified in the LSP portion of the *Schedule of Courses* by a "W". The student must complete English 2 before fulfilling the "W" requirement.
Mathematics: All students must successfully complete at least three hours of mathematics or statistics. This requirement is in addition to the Cluster C requirement which is described in Section B below. Courses approved for the mathematics skills requirement: Mathematics 3, 4, 11, 14, 15, 16, 23, 28, 128, 131, and 168; Economics 125 and Statistics 101.

Distribution Requirements

The University courses in the LSP that provide students with broad liberal knowledge and experience are grouped into three Clusters:
Cluster A (Humanities and Fine Arts): The study of humanities develops knowledge of and appreciation for the accumulated wisdom and experience contained in world literature, history, fine arts, religion, and philosophy, with the objective of bringing the student to an active consciousness of the living, operating, and continuing values of human culture.
Cluster B (Social and Behavioral Sciences): The social and behavioral sciences develop in students the knowledge and appreciation of both themselves and the world in which they live. Through the study of anthropology, economics, geography, linguistics, political science, psychology, sociology, and communication studies, students are able to comprehend major concepts, evaluate movements and ideas, and anticipate future trends in societies both at home and abroad.
Cluster C (Natural Sciences and Mathematics): Courses in the natural sciences and mathematics provide information about the natural world, and provide a perspective on how an understanding of the natural world is developed. Educated persons should have a knowledge of the physical, chemical, geological, and biological entities and processes that consititute the natural world. Courses in mathematics, statistics, and computer science can provide the technical tools for an understanding of the natural world, as well as an understanding of the methods and value of mathematics considered as a discipline in itself.

Distribution of Cluster Requirements

Cluster A Requirements: 12 hours of Cluster A courses must be distributed according to the following provisions and successfully completed:

(1) Courses must be successfully completed in three disciplines.

(2) Two courses must be successfully completed in the same discipline.

(3) If foreign language courses are chosen to fulfill Cluster A requirements, no student may use more than one first semester course of an elementary foreign language. Language courses in a student's native language may not be used to fulfill Cluster A requirements.

(4) No more than one multidisciplinary studies (MDS) course may be used to fulfill Cluster A requirements.

Cluster B Requirements: 12 hours of Cluster B courses must be successfully completed and distributed according to the following provisions:

(1) Courses must be successfully completed in three disciplines.

(2) Two courses must be successfully completed in the same discipline.

(3) No more than one multidisciplinary studies (MDS) course may be used to fulfill Cluster B requirements.

Cluster C Requirements: 11-12 hours of Cluster C courses must be successfully completed and distributed according to the following provisions:

(1) Courses must be successfully completed in two disciplines.

(2) At least one course must include a laboratory (identified in the *Schedule of Courses*.

(3) No more than one multidisciplinary studies (MDS) course may be used to fulfill Cluster C requirements.

One three credit-hour course must focus substantially on the study of a foreign or minority culture or cultures or on women and/or issues of gender.

Inventory of LSP Courses

The courses listed below in Clusters A, B, and C do not constitute an inclusive listing. The Liberal Studies Committee will be changing the list of courses as evaluations are continually made of courses submitted to the LSP Committee for its approval. Students and advisers should consult the latest *Schedule of Courses* for the most recent inventory of courses included in the Liberal Studies Program. Any course listed at any time during the student's period of study may be counted for Liberal Studies Program credit.

Cluster A Courses:

Arabic 1, 2, 3, 4.
Art 30, 105, 106.
Chinese 1, 2, 3, 4.
Classics 1, 2, 3, 4, 11, 12, 13, 14, 101, 102.
Communication Studies 21, 187.
English 21, 22, 24, 25, 30, 35, 36, 40, *80, *85, 125, 130, 131, 132, 133, 134, 141, 143, 150, 170, 171, 172, 175, 178, 180, 181, *186, *188.
Foreign Literature in Translation *13, *14, *15, *16, *17, *18, *111, *112, *121, *122, *131, *132, *141, *142, *151, *152, *161, *162, *166, *171, *181, *182, *188, *189.
French 1, 2, 3, 4, 10, 11.
German 1, 2, 3, 4, 10, 11.
History 1, 2, *5, *6, 11, 12, 52, 53, 100, 101, 103, 105, 107, 109, *117, *118, 119, 120, *121, 122, 155, 156, 157, 159, 161, 177.
Humanities 1, 2, 3, 4, *5, 10, 11, *20.
Italian 1, 2, 3, 4.
Japanese 1, 2, 3, 4.
Landscape Architecture 112.
Linguistics 3.
Multidisciplinary Studies *40, 91, 99.

Music 30, 33, 34, 129, 136, 137, 138.
Philosophy 1, 2, 3, 4, 10, 13, 15, 17, 20, 103, 105, 106,108, 111, *113, 120, 121, *122, 123, *125, 150, 158, 159, 161/Math 161, 166, 171, 172, 187.
Polish 1, 2.
Portuguese 1, 2, 3, 4.
Religious Studies 5, 100, 101, 102, 103, 104, 105, 110, 111, 112, 120, 121, 128, *130, *131, *132, 142, 150.
Russian 1, 2, 3, 4.
Spanish 1, 2, 3, 4, 10, 11.
Theatre 30, 50, 74.
Women's Studies *40.

Cluster B Courses:

Agricultural Education 162.
Child Development and Family Studies 10.
Communication Studies 11, 12, 14, 80, 106, 109, *134, *135, 140, 180.
Economics 51, 54, 55.
Forestry 140.
Geography 1, *2, 8, 105, 109, 110, 140, 141, *143, *144, 145.
History *4, *141, *142.
Journalism 1.
Linguistics 1.
Mineral and Energy Resources 97.
Multidisciplinary Studies 2, *40, 50, *60, 70, 90, 92, 99.
Political Science 1, 2, 3, 7, 110, 120, *137, *150, *151, 160, 170, 171.
Psychology 1, 141, 151, *170.
Recreation and Parks 43.
Resource Management 1.
Social Work *47.
Sociology & Anthropology 1, *5, 7, *51, 121, 122, 123, 125, 131, 132, *135, 136, 137, *138, 140, *145, 152, *155, *156, 157, 158, 159, *160, 162.
Women's Studies *40, *145.

Cluster C Courses:

Agricultural Microbiology 141.
Astronomy 106.
Biology 1, 2, 3, 4.
Chemistry 11, 12, 15, 16, 17, 18.
Computer Science 1, 5.
Economics 125.
Geography 7, 107.
Geology 1, 2, 3, 4, 6, 7.
Human Nutrition and Foods 71.
Mathematics 3, 4, 11, 14, 15, 16, 23, 28, 128, 131, 168.
Multidisciplinary Studies 2, *60, 70, 90, 91.
Philosophy 11.
Physical Science 11, 12.
Physics 1, 2, 7, 8, 11.
Statistics 101

An asterisk precedes the course numbers for those courses which satisfy the foreign culture, minority, or gender studies requirement.

Approved 200-Level Courses

No 200-level courses are included in Clusters A, B, and C because they are deemed to be not ordinarily appropriate for the Liberal Studies Program. However, a student may receive approval from his/her adviser to take a 200-level course from the

list of approved courses indicated below, in fulfillment of the LSP requirement for each of the three cluster areas.

Cluster A Courses:

Communication Studies 230.
English 211, 220, 235, 236, 240, 250, 255, 256, 261-268, *288.
History 200, 204, 205, 206, 207, 208, 214, *225, *226, 231, 232, *245, *246, *251, *252, 253, 259.

Cluster B Courses:

Communication Studies 221.
Economics 211.
Health Education *290.
History 208, 211, *227, *229, *230, 259.
Political Science *235, *250, *251, *254, *255, *256, *258.
Social Work *247.
Technology Education *245.

An asterisk precedes the course numbers for those courses which satisfy the foreign culture, minority, or gender studies requirement.

Branch, Community, and Junior Colleges

You may receive credit for seventy-two hours of credit and grades earned for college-parallel courses completed at community colleges or branch colleges in the West Virginia system of higher education. Such courses may apply toward a baccalaureate degree at WVU if they are the equivalent of a course at WVU. You may also transfer credit for college-parallel courses taken at community colleges or junior colleges that are not a part of the West Virginia system of higher education. However, you will receive credit only for those courses for which you have earned a grade of C or higher. The hours that you transfer from a community college or junior college are normally limited to a maximum of 72 hours of lower-division courses.

Residence Requirements

If you decide to transfer to WVU from another institution of higher learning, then you should transfer no later than the start of your third year. Under no circumstances will a student who enters WVU after October 1 in any year be allowed to receive a degree at the next commencement.

In some special cases, you can leave WVU at the end of your third year, and still receive your degree from WVU. You must enter another accredited institution with the purpose of taking a combined program that will lead to two degrees or prepare for graduate study. Before you leave, you must apply to the Academic Standards Committee of your college to request permission to do the work of the fourth year, or a part thereof, at the other institution but still receive the degree from WVU. You will receive your degree when you present the proper records from the other school.

If you are a transfer student who has completed all of your undergraduate work in another school in the West Virginia system of higher education, then you must complete either your last 30 hours of work at WVU or at least 36 hours of work at WVU of which 16 of the last 32 hours must be on campus. If you are a transfer student whose undergraduate work has been completed outside the West Virginia system of higher education, then you must complete a total of 90 hours or at least the last 30 hours of work in residence at WVU. You may be required to earn up to 15 hours in your major field regardless of the number of hours or the nature of the courses transferred.

Work Done Out of Residence

It is WVU's policy to discourage taking regular residence courses in absentia. If you begin a course at WVU but fail to complete it due to illness or some other acceptable reason, you may receive permission to complete the work in absen-

tia. The permission must be granted by the Academic Standards Committee of the college or school concerned, and the work must be done under the guidance of a WVU professor. Credit for the course in such cases is allowed only upon a report of a grade of C or better on the final examination. This regulation does not apply to WVU off-campus courses.

If you fail a course (receive a final grade of F) taken at WVU, you must repeat the course at WVU to receive credit for that course. The dean of the college or school in which you are enrolled may authorize an exception to this regulation. If so, then the dean should provide a letter to be placed in your folder authorizing the exception and explaining its basis.

You should be aware of the requirements for residence and your specific degree requirements described in the catalog when transferring credit from other institutions. If you are transferring credit from institutions outside the West Virginia state system of higher education, WVU will accept credit only for courses in which you earned a grade of C or higher provided other conditions above have been met. Under no circumstances will grades be transferred from institutions outside the state system.

WVU Transient Students

(See "Admission of Transfer Students.")

If you decide to take a course or courses at another school, you must have written approval from your adviser, your dean, and the Director of Admissions and Records or his designee. To receive such approval, you must have a C average. All approved college-level work is accepted for transfer from institutions in the WV state systems, provided the above requirements have been met. Only courses with grades of C or higher are accepted from institutions not in the state system.

If you fail a course at WVU, you may not repeat this course at another institution and transfer the credit to WVU unless you have the approval of the dean of the college or school in which you are enrolled.

Substitution for Required Courses

You may want to substitute one course for another that is in your curriculum or may be required for your degree. In order to do this, you must get written permission from the Academic Standards Committee of your college or school.

Credit Examinations

Advanced Placement Program (AP)

West Virginia University encourages you to work to your full capacity and to earn your degree at your own learning speed. As a high school junior or senior, you can enter the University early, as previously explained, or you can take college-level courses at your school in conjunction with the College Entrance Examination Board (CEEB). The Advanced Placement Service administers three-hour examinations to show competence equal to that received by taking the actual college course. The following chart shows the subject areas, the necessary test scores, and the WVU equivalent courses.

College Level Examination Program (CLEP)

If you apply for admission to WVU and you have gained a significant level of maturity through your life experiences, you may gain college credit for these educationally related experiences through the College Level Examination Program (CLEP) of the CEEB. A policy of the University of West Virginia Board of Trustees allows University credit to be awarded for successful completion of CLEP subject examinations, except English composition and freshman English. Up to 34 hours of general

College Level Examination Program (CLEP)

General Examinations	WVU Equivalent	Minimum Score Required
English Comp. (with essay)	English 1 (3 hr.)	590
English Comp. (multiple choice)	No credit	
Humanities	Untranslated LSP A (6 hr.)	500
Mathematics	Untranslated LSP C (4 hr.)	500
Natural Sci.	Untranslated LSP C (6 hr.)	500
Social Sci. & Hist.	Untranslated LSP B (6 hr.)	500
Subject Tests:		
American Lit.	Engl. 24 (3 hr.)	59
Analysis & Interpret. of Lit.	Engl. 35 (3 hr.)	59
College Comp.	No credit	
English Lit.	English 22 (3 hr.)	60
Freshman Engl.	No credit	
College French (levels 1 and 2)	Fr. 1 and 2 (6 hr.)	44
	Fr. 3 and 4 (6 hr.)	55
College German (levels 1 and 2)	Ger. 1 and 2 (6 hr.)	43
	Ger. 3 and 4 (6 hr.)	54
College Spanish (levels 1 and 2)	Span. 1 and 2 (6 hr.)	45
	Span. 3 and 4 (6 hr.)	54
American Govt.	Pol. Sci. 2 (3 hr.)	50
American Hist. I	Hist. 52 (3 hr.)	49
American Hist. II	Hist. 53 (3 hr.)	49
Western Civilization I	Hist. 1 (3 hr.)	50
Western Civilization II	Hist. 2 (3 hr.)	50
Educational Psychology	Ed. P. 103 (3 hr.)	49
General Psychology	Psych. 1 (3 hr.)	50
Human Growth and Development	CD&FS 10 (3 hr.)	51
Intro. Macroeconomics	Econ. 55 (3 hr.)	50
Intro. Microeconomics	Econ. 54 (3 hr.)	50
Intro. Sociology	Soc. & A. 1 (3 hr.)	50
College Algebra	Math. 3 (3 hr.)	48
Trigonometry	Math. 4 (3 hr.)	54
College Algebra/Trig.	Math. 14 (4 hr.)	50
Calculus with Elementary Functions	Math. 15 (4 hr.)	49
General Biol.	Biol. 1 and 2 (6 hr.) (no credit for the labs)	49
General Chem.	Chem. 15 (4 hr.)	50
Computers and Data Processing	C.S. 1 (4 hr.)	49
Intro. to Management	Manag. 105 (3 hr.)	50
Intro. Accounting	Acctg. 51 and 52 (6 hr.)	54
Intro. Business Law B.	Law 111 (3 hr.)	51
Intro. Marketing	Mrktg. 111 (3 hr.)	50

Advanced Placement Program

Subject	Test Score	WVU Equivalent
ART:		
Art History	3	To be determined by Division of Art
BIOLOGY	3	Biol. 1 and 2 (3 hr.)
		Biol. 3 and 4 (1 hr.)
BIOLOGY	4	Biol. 15 (4 hr.)
CHEMISTRY	3	Chem. 15 and 16 (8 hr.)
COMPUTER SCIENCE	3	Non-specific C.S. 3 hr. (Test A)
		Non-specific C.S. 6 hr. (Test A & B)
ECONOMICS:		
Econ., Microeconomics	3	Econ. 54 (3 hr.)
Econ., Macroeconomics	3	Econ. 55 (3 hr.)
ENGLISH:		
English Lang. & Comp.	3	Engl. 1 (3 hr.)
English Lang. & Comp.	4 or 5	Engl. 1 and 2 (6 hr.)
Lit. & Comp.	3	Engl 35 (3 hr.)
Lit. & Comp.	4 or 5	Engl. 35 and 36 (6 hr.)
FOREIGN LANGUAGES:		
French Lang.	3	Fr. 103 and 104 (6 hr.)
French Lit.	3	Fr. 191 (3 hr.)
German Lang.	3	Ger. 103 and 104 (6 hr.)
Latin-Vergil	3	Class. 191A (3 hr.)
Latin-Catullus-Horace	3	Class. 191B (3 hr.)
Spanish Lang.	3	Span. 103 and 104 (6 hr.)
Spanish Lit.	3	Span. 191 (3 hr.)
HISTORY:		
European	3	Hist. 2 (3 hr.)
American	3	Hist. 52 and 53 (6 hr.)
MATHEMATICS:		
Math., Test AB	3	Math 14 (4 hr.)
Math., Test AB	4 or 5	Math. 15 (4 hr.)
Math., Test BC	3	Math 15 (4 hr.)
Math., Test BC	4 or 5	Math. 15 and 16 (8 hr.)
MUSIC	3	To be determined by Div. of Music PHYSICS:*
Phys., Test B	3	Phy. 1 (4 hr.)
Phys., Test B	4 or 5	Phy. 1 and 2 (8 hr.)
Phys., Test C	3	Phy. 11 (4 hr.)
Phys., Test C	4 or 5	Phs. 11 and 12 (8 hr.)
POLITICAL SCIENCE:		
American Government	3	Pol. Sci. 2 (3 hr.)
Comparative Government	3	Pol. Sci. 1 (3 hr.)

**NOTE:* Students receiving AP credit for any physics course will have to register for and complete the corresponding physics labs by special arrangement with the Department of Physics.

education credit may be earned for successful performance on the CLEP General Examinations. Although this program was designed primarily for adults, exceptionally well qualified high school seniors may use the CLEP Program. If you are interested, write to the Director of Admissions and Records for additional information. The table on page 28 indicates the areas in which WVU grants credit based on the minimum score required. It should be noted that no one is eligible for CLEP credits after he/she has enrolled in any institution of higher learning.

If you are a veteran, you may receive advanced placement for specific military experience. Veterans should contact the Director of Admissions and Records for specific information.

Credit by Examination

If you are currently enrolled, you may receive credit for a course or courses if you can demonstrate competency in the course content. The department offering the course determines evaluation standards for the student's competency. If skill and cognitive abilities are components of the course, then both are evaluated. Credit is given only when a satisfactory degree of competency is shown.

A college, school, or department may ask you to prepare a self-evaluation statement. The purpose of the statement is to determine the competency you believe you have and the methods by which you achieved it. If you are interested in credit by examination, contact the dean in the college or school offering the course. The details and procedures will be explained to you at that time.

Credit for Correspondence Work

You may receive credit for correspondence work in non-laboratory courses. You have to meet certain conditions that govern this credit:

A maximum of 30 hours are acceptable.
The work must be from accredited institutions.
The institution must accept the credit toward its own degrees.
WVU must ordinarily accept that institution's residence work.

300-Level Courses

Off-campus. If you are an advanced student and wish to take an off-campus course numbered 300-399, you must submit an undergraduate application for admission and have your official transcripts sent to the Office of Admissions and Records from all of the colleges and universities that you previously attended; the transcript cannot be one sent to you. You must be classified as either a junior or senior and have a cumulative grade-point average of at least 3.0 on a 4.0 scale. The special form granting permission to take a 300- level course may be obtained from the Office of Admissions and Records.

On-campus. If you are an undergraduate junior or senior in any class carrying a 300-level course number, you must have at least a 3.0 cumulative grade-point average and have written approval on a special form from the instructor and your adviser. This form may also be obtained from the Office of Admissions and Records.

Senior Petition for Graduate Credit

If you are a senior and within 12 semester hours of graduation, you may, with prior approval from your adviser, enroll in 300-level graduate courses for graduate credit. You may obtain the senior petition for graduate credit from your adviser or the Office of Admissions and Records.

Graduate Credit Via Senior Petition

You may begin graduate study early through the University's senior petition policy. Come to the Office of Admissions and Records and ask for the senior petition form. After you get the form, you must have it signed by your adviser and the dean of the

college granting your degree and the dean of the college of your intended graduate degree (if different). The University has certain policies for you to follow in order to enroll in a graduate course for graduate credit. The policies are:

- Senior petition applies only to courses numbered 300-399. You must be within 12 hours of receiving your bachelor's degree, and your grade-point average must be at least 3.0 on a 4.0 scale.
- You can receive only 12 graduate hours through the senior petition.
- You must have the proper signatures on your senior petition by the time you enroll in the petitioned courses.

Return the approved senior petition to the Office of Admissions and Records. It is kept on file so that you receive graduate credit for these courses on your permanent record. The dean of the college or school in which you are taking graduate courses must approve any exceptions to the policy.
Note: If you receive graduate credit for a course, the credit for that course does not count for your undergraduate degree.

Visitors

Full-time University students may attend classes as visitors. To visit a class, you must have permission in writing from your adviser and the instructor of the course. A member of the administration, teaching staff, or other regular University employees may also attend classes as visitors. These individuals also must have the written permission from their department and the instructor of the class. As a visitor, you do not receive credit for that class. You may not apply for an advanced standing examination in a class in which you were a visitor.

Auditors

You may register for courses as an auditor and pay full fees for the course. In this situation, you do not receive credit for the course. If you audit a course in one semester, you must let one semester pass before you enroll in the course for credit. You may change your status from audit to grade or grade to audit during the registration period. Attendance requirements for auditors are determined by the instructor of the course. The instructor may delete an auditor from a class list or grade report if attendance requirements are not met. The instructor will direct the Office of Admissions and Records to remove the auditor from the class list or grade report.

Summer Sessions

WVU has two six-week sessions. Summer Session One begins in the middle of May and ends on June 30. Summer Session Two begins on July 1 and ends the second week of August. Requirements for admission and work performance for the summer sessions are the same as for the regular semesters.

You may earn credit toward a baccalaureate, master's, doctoral, or professional degree in the summer sessions. Summer offerings vary from year to year. For complete information concerning course offerings during the summer sessions, consult the Summer Session Schedule of Courses.

Evening Classes

If you are unable to attend classes during the day, the University offers a program of evening courses taught by regular faculty. These courses carry full college credit, and many may be counted toward graduate degrees.

Classification of Students

WVU undergraduates are classified as freshmen, sophomores, juniors, or seniors. These classifications are based upon the number of hours completed. The classifications are as follows:

Freshman classification	1-28 hours, inclusive
Sophomore classification	29-58 hours, inclusive
Junior classification	59-88 hours, inclusive
Senior classification	89 or more semester hours

Grade-Point Average

All academic units of the University require minimum standards of scholastic quality. Your grade-point average is computed on grades earned in courses taken at WVU and institutions in the WV system of higher education only. To be eligible to receive a baccalaureate degree, you must have a grade-point average of at least 2.0 at the time of graduation. Some degree programs require a higher grade-point average overall or in the major courses. Your grade-point average is based on all work for which you received letter grades other than W, WU, and P. See "D/F Repeat Policy".

You must make certain that you know your grade-point standing. You can obtain the necessary information concerning your grade-point standing from the dean of your college or school. To determine your grade-point average, use the method described in the section on grade points.

Graduation with Honors

WVU recognizes distinguished academic achievement by awarding degrees cum laude, magna cum laude, and summa cum laude. This distinction can be on the initial or second baccalaureate degrees. All candidates for a baccalaureate degree with a grade-point average of 3.8 or higher graduate summa cum laude. Those with a grade-point average of less than 3.8, but equal to or above 3.6, graduate magna cum laude. Those with a grade-point average of less than 3.6, but equal to or above 3.4, graduate cum laude.

1. To determine your grade-point average for honors, you must start with the penultimate (next to last) semester or summer session and continue in reverse chronological order until at least 80 graded hours excluding credits earned with a P have been counted. This work must have been completed at WVU or a school in the West Virginia system of higher education. If, in order to get the required number of hours, you have to include any part of a semester or summer session, then you must use the work of the whole semester or summer session. If it is to your advantage to do so, you may use the cumulative grade-point average on all work completed through the penultimate semester at WVU or a school in the West Virginia State System to determine graduation honors. In all cases, the total hours completed must be 80 or more.

2. If you have not completed 80 semester hours at WVU or a school in the West Virginia system of higher education by the end of the penultimate semester, you may petition your dean for a review of your individual case. After review, the dean will forward requests for exceptions to the regulation to the Provost for the final decision.

3. The recognition of graduation with honors, summa cum laude, magna cum laude, or cum laude, is made on your diploma, in the Commencement Bulletin, and on your permanent record (transcript).

If you are completing your second baccalaureate degree at the University, you are still eligible to receive the graduation honors of summa cum laude, magna cum laude, or cum laude. If you achieve the grade-point average stated above for summa cum laude, magna cum laude, or cum laude in both the post-baccalaureate hours and in the last 80 hours, you graduate with the appropriate honors. The following regulations govern these awards:

The grade-point average for graduation with honors is computed on the last 80 semester hours, excluding credits earned with a grade of P or S, completed at WVU or a scchool in the West Virginia state system.

At least 30 of the 80 hours must have been completed in the second degree program through the penultimate (next to last) semester or summer session. The remainder of the 80 semester hours count from the student's first baccalaureate degree program, counting in reverse chronological order from the semester or summer.

Academic Progress

Courses

As a general rule, most courses taught at WVU extend for one semester, although some extend for two semesters. Credit is not awarded for a course if you do not attend the whole course. The only exception to this rule occurs if the Committee on Academic Standards decides to grant an exception. Grades reported at the end of the first semester in a two-semester course are merely an indication of the quality of the student's work to that point. Credit is not given for that part of the course completed. Courses taught in the summer sessions carry the same credit value as fall and spring semester courses.

Evaluation of Student Progress

Your progress is evaluated by a variety of methods. The measurement and evaluation of learning are consistent with the objectives of the course and provide the opportunity for you and your instructor to evaluate your progress. The University discourages evaluation by final examination only. You are responsible for all materials presented or assigned in scheduled instructional sections. If you do not complete all assigned work, you may earn an incomplete (I) or a failing grade (F).

The last week of each semester of the academic year is designated finals week. Final examinations for the summer sessions are given on the last day of classes. The *Schedule of Courses* gives the date and times for final examinations.

Practical laboratory tests, make-up examinations, and regularly scheduled short quizzes are the only tests permitted for day classes during the week of classes preceding finals week. Evening classes have their final exams the last meeting of the class preceding finals week.

If you take a section of a multi-section course, you may be required to take the departmental final examination. This test is given during the regular final examination period.

Grading System

A	excellent (given only to students of superior ability and attainment)
B	good (given only to students who are well above average, but not in the highest group)
C	fair (average for undergraduate students)
D	poor but passing (cannot be counted for graduate credit)
F	failure
I	incomplete
W	withdrawal from a course before the date specified in the University Calendar
WU	withdrawal from the University doing unsatisfactory work
P	pass (see Pass-Fail Grading below)
X	auditor, no grade and no credit
CR	credit but no grade
PR	progress. Final grade at end of the second semester (HSC)
S	satisfactory
U	unsatisfactory (equivalent to F)
*F	unforgivable F, not eligible for D/F repeat policy

Pass-Fail Grading

Pass-fail grading encourages you to take elective courses not related to your degree concentration. Pass-fail grading also facilitates grading in competency-based courses which may be an integral part of your program.

Student Option. Any full-time student who has completed 15 hours or more and who has maintained a 2.0 grade-point average may take a maximum of four (4) hours each semester or summer session on a pass-fail basis. Any course taken on a pass-fail basis must be a free elective. You are limited to a total of 18 hours of pass-fail credit in your collegiate career. Unless otherwise indicated, courses in your major, courses in other subjects that are required by the major, and courses taken to satisfy University, college, school, or departmental requirements are excluded from pass-fail. For example, courses elected to satisfy the English, Liberal Studies Program (LSP), or foreign language requirements may not be taken for pass-fail grading.

If you elect a course on a pass-fail basis, you are graded as a regular student. The instructor turns in the appropriate letter grade to the Office of Admissions and Records. This letter grade is then converted to a P on the basis of A, B, C, or D for a pass and F for a fail. The grade of P does not affect your grade-point average. However, any F grade affects your grade-point average whether it is a regular grade or a pass-fail grade.

You choose the option of pass-fail grading for a course during the registration period. Once the registration period has ended, you may not change the grade status in the course.

College or School Option. A department or unit may designate any performance- or competency-based course as exclusively pass-fail. To institute this, the college or school must have the approval of the Faculty Senate. Courses offered only as pass-fail are not included in the maximum of 18 hours that may be freely elected under the student option.

Grade Points

Each letter grade has a numeric value. Grade points are based on this number value and the credit-hour value of the course.

A	B	C	D	F	I	U
4	3	2	1	0	0	0

The grade-point average is computed on all work for which you registered, with the following exceptions:

* Courses with a grade of W, WU, P, S, and X carry no grade value. The grade of incomplete (I) initially carries no grade value.

* The grade of I is given when the instructor of the course believes that the work is unavoidably incomplete or that an additional examination is justified. To remove the grade of I, you do not register for the course again; instead, you arrange to submit incomplete or supplemental work to the original instructor of the course. When you receive the grade of I and later remove the incomplete grade, the grade-point average is calculated on the basis of the new grade. If you do not remove the I grade within the next semester in which you are enrolled, the grade of I is treated as an F (Failure). The Academic Standards Committee of the appropriate college or school may allow you to postpone removal of the I grade if you can justify a delay.

* If you are working toward teacher certification, you are responsible for every registration in a course in which the grade of A, B, C, D, F, WU, P, X, or I is received.

GPA Calculations

Students like to know how to calculate their overall and semester grade-point averages. The following example shows how to do it. Assume you are registered for 16 hours and receive the following grades in these courses:

English 1	B	Mathematics 3	A
Geology 1	C	Political Science 1	B
Spanish 1	D	Orientation 1	P

Course	*Credit* *	*Grade*	*Grade Value* *	*Credit X Grade Value*	*Grade-Points* **
English 1	3	B	3	3 X 3	= 9
Geology 1	3	C	2	3 X 2	= 6
Spanish 1	3	D	1	3 X 1	= 3
Mathematics 3	3	A	4	3 X 4	= 12
Political Science 1	3	B	3	3 X 3	= 9
Orientation 1	1	P	0	1 X 0	= 0

* Multiply the credit by the grade value to get the grade points earned for each course.
**Add the Total Grade Points, in this case, 39.
***Divide the Total Grade Points by the total credit hours with a grade value.

Remember that P grades have no grade value, so in this case, there are 15 credit hours for the GPA calculation. 39 divided by 15 = grade-point average of 2.6.

D/F Repeat Policy

WVU has a D/F repeat policy for undergraduate students who have not received their initial baccalaureate degree. If you earn a D or F in a course at WVU taken no later than the semester or summer session registration when you reach a cumulative total of 60 hours attempted, you are eligible to D/F repeat that course. To invoke the D/F repeat rule, you must meet with your academic adviser sometime during the semester in which you are repeating the course and fill out the appropriate forms. You must repeat the course at WVU. You will have only one opportunity to improve your original grade. The new grade becomes the grade that counts, even if your performance is worse than when you were originally graded.

When you have D/F repeated a course, the following happens:

1. The original grade is disregarded for the purpose of determining your grade-point average, hours passed, and hours attempted.
2. The original grade is not deleted from your permanent record.
3. The second grade is entered on your transcript and marked repeat in the semester that you repeated the course.
4. You can exercise your right under the D/F repeat policy at any time before you receive your initial baccalaureate degree. If you get a grade of F in a course for disciplinary reasons or for cheating, the grade is not eligible for change under the D/F repeat provisions. Such a failure is indicated on your permanent record by an *F and is calculated in your grade-point average.

Grade Reports

During the seventh week of classes in the fall and spring semesters, instructors submit a report of all undergraduate students earning grades of D or F. These grades are used for counseling and are not recorded on the student's official permanent record. These reports are sent first to the Office of Admissions and Records and then to the student, the student's adviser, and the dean of the college or school in which the student is enrolled.

final grades of all seniors provisionally approved for graduation at the close of each semester or summer session are reported to the deans of their colleges or schools. Special report forms for this purpose are supplied by the Office of Admissions and Records.

At the end of each semester or at the close of each summer session, a report of each student's work is prepared for that period and sent to the student.

Transcripts of Academic Records

Each copy of an official transcript costs three dollars, payable in cash or money order. You may request, in person, an on-the-spot transcript at a cost of five dollars. Priority service is not available at all times. Because of demand, it may take two to three weeks to process an application for a regular transcript at the close of a semester or summer session. At other times, it is the policy of WVU to process all regular transcript requests within 48 hours of receipt of the request.

If you owe money or have some other financial obligation to any unit of the University, you forfeit your right to claim a transcript of your record until you meet your obligation. Additionally, you also forfeit the right to claim your diploma until these financial obligations have been met.

When you apply for a transcript, you must furnish your last date of attendance and your student number. Be sure to indicate the full name under which you were enrolled. Requests for transcripts must be made in writing to the Office of Admissions and Records. We cannot accept telephone requests because of the risk of the security of your record.

Final Grade Appeals

Students have the right to appeal final course grades which they believe reflect a capricious, arbitrary, or prejudiced academic evaluation, or reflect discrimination based on race, sex, age, handicap, veteran status, religion or creed, sexual orientation, color, or national origin. The grade appealed shall remain in effect until the appeal procedure is completed or the problem resolved. The primary intent of this procedure is to provide a mechanism whereby a student might appeal a failing grade or a grade low enough to cause the student to be eliminated from some program or to require the repetition of a course. Grade appeals that do not meet this classification are not precluded.

Step 1. The student shall discuss the complaint with the instructor involved prior to the midsemester of the succeeding regular semester, whether the student is enrolled or not. If the two parties are unable to resolve the matter satisfactorily, or if the instructor is not available, or if the nature of the complaint makes discussion with the instructor inappropriate, the student shall notify the chairperson of the instructor's department or division (or, if none, the dean). The chairperson or dean shall assume the role of an informal facilitator and assist in their resolution attempts. If the problem is not resolved within 15 calendar days from when the complaint is first lodged, the student may proceed directly to Step 2.

Step 2. The student must prepare and sign a document which states the facts constituting the basis for the appeal within 30 calendar days from when the original complaint was lodged. Copies of this document shall be given to the instructor and to the instructor's chairperson (or, if none, to the dean). If, within 15 calendar days of receipt of the student's signed document, the chairperson does not resolve the problem to the satisfaction of the student, the student will forward the complaint to the instructor's dean (see Step 3).

Step 3. Within 15 calendar days of receipt of the complaint, the instructor's dean shall make a determination regarding the grade, making any recommendation for a grade change to the instructor involved. If the instructor involved does not act on the dean's recommendation, or if the student is in disagreement with the decision of the dean, the dean will refer the case to a representative committee, appointed by the

dean's recommendation, or if the student is in disagreement with the decision of the dean, the dean will refer the case to a representative committee, appointed by the dean, for final resolution. This committee shall consist of three or more faculty members, including at least one person outside the instructor's discipline.

1. Upon receiving an appeal, the committee will notify in writing the faculty member involved of the grade challenge, which shall include a statement of the facts and evidence to be presented by the student.

2. The committee shall provide to the faculty member involved and the student making the appeal written notification of their right to appear at a hearing to be held before the department or college or school representative committee, together with the notice of the date, time, and place of the hearing.

3. The administrative procedure is not adversarial in nature; the formal rules of evidence do not apply.

4. The final decision of this committee shall be forwarded to the instructor and to the dean involved. If the decision requires a change of grade, the instructor shall take action in accordance with the committee's decision.

5. If the instructor does not act within five days, the dean shall make any necessary grade adjustment.

6. In the case of grade appeals, the dean functions as the President's designee; therefore, implementation of this decision shall end the appeal procedure.

Absences

If you are absent from class for any reason, you are responsible for all work that you missed. Absences may jeopardize your grade(s) in that class or possibly the ability to continue in that course. Instructors are responsible for keeping an accurate record of students enrolled in their classes and their attendance. If an instructor uses attendance records in determining the final grade in a course, then this fact must be announced to the students in writing within the first five class meetings.

Absence from Examinations

You are required to take all regular examinations in a course. If you attend a course all semester but you do not take the final examination and you do not have the instructor's permission to miss it, the instructor may give you a grade of zero for the examination and report a grade of F for the course. If, however, the instructor believes your absence was necessary, he/she has the option to report a grade of incomplete (I). If your absence from a regularly scheduled examination was due to illness, an authorized University activity, or another reason approved by your dean, you have the opportunity to make up the examination.

Withdrawals From Classes

Deadlines: Until the Friday of the tenth week of class (or Friday of the fourth week in a six-week summer session, or Friday of the second week of a three-week summer session), students may withdraw from individual courses. Deadlines are published in the University *Schedule of Courses* each semester. If you follow all established University procedures and withdraw before the published deadline, you will receive a W on your transcript. Grade-point averages are not affected in any way by this mark.

Procedures:

1. Before withdrawing from individual classes, consult your adviser to determine:

• Whether your course load would be reduced below the minimal requirements set by your college or school. If so, you must get permission from the Committee on Academic Standards of your college or school before you submit the course adjustment form.

• Whether your course load would be reduced below the minimal number of hours required to qualify for financial aid, varsity athletic competition, or international full-time student status;

• Whether the courses to be dropped are required to fulfill academic probationary conditions;

• Whether the courses from which you want to withdraw might be corequisite with other courses you are taking, or prerequisite to other courses required for the next term.

2. Ask your adviser to sign the University course adjustment forms and then submit the forms to the Office of Admissions and Records.

Withdrawal From the University

Deadlines: You may withdraw from the University any time before the last day of a semester or session on which regular classes are scheduled to meet. If you withdraw before the Friday of the tenth week of classes (or the Friday of the fourth week in a six-week summer session, or the Friday of the second week of a three-week summer session) you receive grades of W in all of your courses for that semester or session. After these deadlines, you will receive grades of W in those courses in which you made satisfactory progress and grades of WU for courses in which your progress had been unsatisfactory.

Procedures: 1. Students who decide to leave WVU should withdraw from all classes and must do so in accordance with established University policy. Students are responsible for all financial obligations and for following established procedures. This includes the completion of forms and the delivery of the completed forms to appropriate officials. Students not fulfilling their financial obligations may have difficulty withdrawing from the University. A withdrawal becomes official only after the forms have been recorded by the Director of Admissions and Records.

2. Students who are unable to withdraw in person because of illness, accident, or other valid reasons still must send notification of their intention to withdraw to the Office of Student Life. The notice should be verified in writing and the student ID and PRT cards enclosed.

3. Students who desire to withdraw from WVU must obtain a withdrawal form from the Student Affairs office (or dean's office of an off-campus instructional unit). Withdrawal procedure is explained at that time. Identification (ID) and PRT cards must be presented.

4. With the help of their academic advisers, students are responsible for determining how withdrawal from the University may affect their future status with the University, including such aspects as suspension for failure to make progress toward a degree or violation of established academic probation and eligibility for scholarships, fellowships, or financial aid.

Academic Leave of Absence

WVU offers undergraduate students in good standing, as defined by WVU's uniform suspension policy and not subject to disciplinary action, the opportunity to request an academic leave of absence. The academic leave of absence is designed for the student who wishes to be away from his/her academic endeavors at WVU for one or more semesters, but intends to return at a later date. Leave of absence status must be requested before the beginning of the semester for which the leave is desired. The academic records of students on an academic leave of absence remain in an active status. While on an academic leave of absence, the student retains the right to use certain campus facilities such as the Reading Lab, Writing Lab, Math Lab, Student Counseling Service, and Career Services. When a student decides to return to WVU after his/her academic leave of absence, application fees are waived. While on an academic leave of absence, the student receives communications from WVU. Academic advisers and the Office of Admissions and Records can provide additional details about an academic leave and eligibility requirements.

Re-Enrollment After Withdrawal

After you withdraw from WVU in two consecutive semesters (excluding summer sessions), you may not register for further work without approval of the dean of the college or school in which you want to register and subject to conditions set by that dean.

Committee on Academic Standards

The Committee on Academic Standards of each college or school shall have authority to proceed according to its best judgment in regard to students referred to it for consideration. All orders of the committee shall become effective when approved by the dean of the college or school. In exercising its authority, the committee shall not suspend a student during a semester except for willful neglect and in cases where the student's class grades are so low that further class attendance would be a waste of time. No suspension shall become effective until approved by the dean of the college or school.

Probation, Suspension, Readmission, Expulsion Policy

Uniform Probation

Students with a cumulative grade-point average below 2.0 are notified on semester grade reports that their academic performance is unsatisfactory. Such students may be subject to probation by the dean of their college or school.

A unit may require a grade-point average above 2.0 or other academic requirements for purposes of determining probation or meeting degree requirements.

Students have the right to have the sanction of academic probation reviewed and explained by the academic official who imposed the sanction. Academic probation is not recorded on a student's permanent record and essentially constitutes a warning to the student of standards which must be met.

Uniform Academic Suspension Regulations

The student whose cumulative grade-point deficiency exceeds the "allowable grade-point deficiency" (see Table) is subject to suspension at any time. Normally, students are suspended at the end of a semester or summer school session. Deans have the authority to waive suspension in favor of probation if in their judgment the circumstances of individual cases so warrant. The suspension rule will be set aside only under extraordinary conditions.

Academic suspension identifies the status of a student who has failed to meet the University minimum standards and who has been notified formally by the dean of the college or school of academic suspension. Suspension from the University means that a student will not be permitted to register for any classes, including those in summer sessions, offered by the University for academic credit until the student has been officially reinstated. The normal period of suspension is a minimum of one academic semester but will not exceed one calendar year from the date of a student's first suspension. A student who has been suspended for academic deficiencies and who takes courses at other institutions during the period of suspension cannot automatically transfer such credit toward a degree at West Virginia University upon readmission to the University.

After one semester of satisfactory performance (C average or better on a minimum of 12 credit hours earned during a regular semester or during the summer sessions) the appropriate transfer credit will be entered into the student's record upon certification by the adviser and dean that the above conditions have been met. A student who has preregistered and is subsequently suspended shall have his/her registration automatically cancelled.

Maximum Allowable Grade-Point Deficiency*

*Total Hours Attempted***	*Maximum Grade-Point Deficiency***	*Total Hours Attempted***	*Maximum Grade-Point Deficiency***
10-19	20	55-59	12
20-24	19	60-64	11
25-29	18	65-69	10
30-34	17	70-74	9
35-39	16	75-79	8
40-44	15	80-84	7
45-49	14	85 or more	6
50-54	13		

Reinstatement After Suspension

During the semester immediately following the effective date of suspension, suspended students may petition in writing for reinstatement. The college or school petitioned shall establish the terms of reinstatement for successful student petitions.

After one calendar year from the effective date of suspension, any student who has been suspended one time shall, upon written application, be reinstated to the University and to the college or school in which the student was previously enrolled, unless the student petitions for admission to another college or school. The college which reinstates the student removes the student's suspension restriction in Admissions and Records and accepts the student.

A suspended student who is reinstated under the provisions above will be placed on academic probation and will be subject to the maximum grade-point deficiency regulations as before, unless the terms of probation agreed to by the student and that college stipulate otherwise. Each college or school shall have the right to establish requirements or performance expectations.

After the second or any subsequent suspension, a student may be reinstated to the University provided that a college or school agrees to reinstate the student. After a student has been reinstated, he/she must apply for readmission through the Office of Admissions and Records.

Appeal of Suspension

Imposition of academic suspension based on grade-point average, failure to meet the conditions previously specified for removal of academic probation, or failure to meet the conditions of admission, may be appealed under the following conditions:

1. The student may appeal individual final course grades and, if successful, may be reinstated.

2. The student may make an appeal to the appropriate dean based on erroneous calculation of the grade-point average or on erroneous calculation of the time period within which a grade-point average must be achieved. The decision of the dean, as the President's designee, is final.

Students have the right to appeal academic suspensions based on requirements or standards other than grades or grade-point average which they believe reflect capricious, arbitrary, or prejudiced academic evaluation, or reflect discrimination based on race, sex, age, handicap, veteran status, political affiliation, color, creed or religion, sexual orientation, or national origin. At the dean's discretion, suspensions may remain in effect until appeal procedures are completed.

*The grade-point deficiency is the difference between the number of grade points needed for a 2.0 average and the number of grade points that a student has actually earned in all courses attempted.

**Includes all hours attempted in institutions in the West Virginia System of Higher Education, excluding grades of P exclusive of the D/F Repeat Policy.

Step 1. The student shall discuss the complaint with the dean involved within 30 calendar days of the action taken. If the two parties are unable to resolve the matter satisfactorily within 15 calendar days, the student may proceed to Step 2.

Step 2. The student must prepare and sign a document which states the facts constituting the basis for the appeal. A copy of this document shall be given to the University Committee on Student Rights and Responsibilities. Within 15 calendar days of receipt of the appeal, the University Committee on Student Rights and Responsibilities will arrange a hearing using the following procedures:

1. All parties involved shall receive written notice of the date, time, and place of the hearing.
2. The student may be advised by a person of his/her choice from within the institution; likewise, the academic officer recommending suspension may have an adviser from within the institution. Such advisers may consult with but may not speak on behalf of their advisees or otherwise participate.
3. The administrative procedure is not adversarial in nature; the formal rules of evidence do not apply.
4. Witnesses may be called by any of the parties involved.
5. A record of the appeal shall be prepared in the form of summary minutes and relevant attachments and will be provided to any of the parties involved upon written request.

The decision of the University Committee on Student Rights and Responsibilities will be sent to the dean involved and the student within 7 calendar days of the hearing. If the decision requires a reinstatement, the dean will take action in accordance with the Committee's decision. If the decision of the Committee is to uphold the suspension, the student's appeal must reach the appropriate Vice President within 30 calendar days of receipt of the Committee decision. The Vice President will review and make a decision regarding the suspension within 15 calendar days of receiving the student's appeal. The decision of the Vice President, as the President's designee, is final.

Uniform Academic Dismissal Regulations

Academic dismissal from the University means that a student will not be permitted to register for any classes, including those in summer sessions, offered by the University. Academic dismissal can result from repeated failure to make academic progress and/or to meet probationary terms set forth in writing by the student's college or school.

After five calendar years from the effective date of academic dismissal, any student who has been dismissed shall, upon written application, be considered for reinstatement to the University, with the terms of reinstatement to be established by the college or school entered. Failure to meet these terms will result in permanent academic expulsion.

Appeal of Dismissal

Note: The procedures and appeals described do not apply to dismissal as a sanction for academic dishonesty.

The time limitations stated herein are suggested in order to render a decision as expeditiously as possible. In the case of University holidays or absence of person(s) involved, reasonable delays may be expected.

A decision to dismiss a student for failure to meet academic standards (as distinguished from academic dishonesty) can be made only after the student has been counseled by the appropriate departmental committee or representative, with counseling to take place as soon as possible after discovery of the problem. After the student is given a reasonable opportunity to correct deficiencies, there shall then be a formal

review of the student's status by the appropriate departmental or program committee to determine whether the student shall be retained or dismissed. The student may provide the committee written documentation of his/her efforts to correct deficiencies.

A committee recommendation for dismissal, including any documentation provided by the student to the committee, shall be forwarded to the student's dean and to the student. Within 15 calendar days of receipt of the committee's recommendation, the dean shall inform the student and the student's department/program of his/her decision. A decision to dismiss shall specify whether the dismissal is from the program or college/school. The dean may also dismiss a student from the institution if the student does not meet institutional standards.

Dismissal, based on grades or grade-point average, from undergraduate programs, graduate programs, professional programs, and/or from the institution, may be appealed.

Step 1. The student shall prepare and sign a document which states the facts constituting the basis for the appeal. A copy of this document must reach the dean within 30 calendar days of receipt of written notice of dismissal. The student shall be given an opportunity to discuss the appeal with the dean at any time in Step 1. If the matter is not resolved satisfactorily within 15 calendar days of the dean's receipt of the student's appeal, the student may proceed to Step 2.

Step 2. The student will forward a copy of the appeal to the appropriate Vice President within 15 calendar days of failure to resolve the matter at the dean's level. Prior to the decision of the Vice President, the student will be given an opportunity to discuss the appeal with the Vice President. The decision of the Vice President, as the President's designee, shall be rendered within 15 days of receipt of the student's appeal and is final.

Dismissal, based on failure to meet academic requirements or performance standards irrespective of grades or grade-point average, from undergraduate programs, graduate programs, professional programs, and/or from the institution, may also be appealed. Students have the right to appeal academic dismissal based on requirements or standards other than grades or grade-point average which they believe reflect capricious, arbitrary, or prejudiced academic evaluation, or reflect discrimination based on race, sex, age, handicap, veteran status, sexual orientation, color, creed or religion, political affiliation, or national origin.

Step 1. The student shall prepare and sign a document which states the facts constituting the basis for the appeal. A copy of this document must reach the dean within 30 calendar days of receipt of written notice of dismissal. The student shall be given an opportunity to discuss the appeal with the dean at any time in Step 1. If the matter is not resolved satisfactorily within 15 calendar days of the dean's receipt of the student's appeal, the student may proceed to Step 2.

Step 2. The student will forward a copy of the appeal to the University Committee on Student Rights and Responsibilities, which, within 15 calendar days of receipt of the student's appeal, will arrange a hearing using the following procedures:
1. All parties involved shall receive written notice of date, time, and place of hearing.
2.The student may be advised by a person of his/her choice from the institution; likewise, the academic officer recommending academic dismissal may have an adviser from the institution. Such advisers may consult with but may not speak on behalf of their advisees or otherwise participate directly in the proceedings unless they are given specific permission by the University Committee on Student Rights and Responsibilities Chairperson.

3.The administrative procedure is not adversarial in nature; the formal rules of evidence do not apply.
4.Witnesses may be called by any of the parties involved.
5.A record of the appeal shall be prepared in the form of summary minutes and relevant attachments and will be provided to any of the parties involved upon written request.

The University Committee on Student Rights and Responsibilities will reach a decision within 7 days. The committee's recommendation for dismissal must be reviewed by the appropriate Vice President, who may confirm or remand the recommendation with specific instructions. Prior to the decision of the Vice President, the student will be given an opportunity to discuss the appeal with the Vice President. Within 15 calendar days of a recommendation for dismissal confirmed by the Vice President, the student may appeal to the President. The decision of the President is final.

Academic Integrity/Dishonesty

The academic development of students and the overall integrity of the institution are primary responsibilities of WVU. Academic dishonesty is condemned at all levels of life, indicating an inability to meet and face issues and creating an atmosphere of mistrust, disrespect, and insecurity. In addition, it is essential in an academic community that grades accurately reflect the attainment of the individual student. Faculty, students, and administrators have shared responsibilities in maintaining the academic integrity essential for the University to accomplish its mission.

Responsibilities

Students should act to prevent opportunities for academic dishonesty to occur, and in such a manner to discourage any type of academic dishonesty.
Faculty members are expected to remove opportunities for cheating, whether related to test construction, test confidentiality, test administration, or test grading. This same professional care should be exercised with regard to oral and written reports, laboratory assignments, and grade books.

Deans and department chairpersons are expected to acquaint all faculty with expected professional behavior regarding academic integrity, and to continue to remind them of their responsibility. Deans and department chairpersons shall assist faculty members and students in handling first- offense cheating allegations at the lowest possible level in the University, and with discretion to prevent damage to the reputation of any person who has not been found guilty in the prescribed manner.

Each member of the teaching faculty and all other WVU employees, including but not limited to assistants, proctors, office personnel, custodians, and public safety officers, shall promptly report each known case of academic dishonesty to the appropriate supervisor, department chairperson, or dean of the college or school concerned, and to the Office of Judicial Programs, Office of Student Life.

Academic Dishonesty Defined

West Virginia University expects that every member of its academic community shares the historic and traditional commitment to honesty, integrity, and the search for truth. Academic dishonesty is defined to include but is not limited to any of the following:

1. Plagiarism: To take and pass off as one's own the ideas, writings, artistic products, etc. of someone else; for example, submitting, without appropriate acknowledgement, a report, notebook, speech, outline, theme, thesis, dissertation, or other written, visual, or oral material that has been knowingly obtained or copied in whole or in part, from the work of others, whether such source is published, including

(but not limited to) another individual's academic composition, compilation, or other product, or commercially prepared paper.

2. Cheating and dishonest practices in connection with examinations, papers, and projects, including but not limited to: a. Obtaining help from another student during examinations. b. Knowingly giving help to another student during examinations, taking an examination or doing academic work for another student, or providing one's own work for another student to copy and submit as his/her own. c. The unauthorized use of notes, books, or other sources of information during examinations. d. Obtaining without authorization an examination or any part thereof.

3. Forgery, misrepresentation or fraud:

a. Forging or altering, or causing to be altered, the record of any grade in a grade book or other educational record.

b. Use of University documents or instruments of identification with intent to defraud. c. Presenting false data or intentionally misrepresenting one's records for admission, registration, or withdrawal from the University or from a University course.

d. Knowingly presenting false data or intentionally misrepresenting one's records for personal gain.

e. Knowingly and unethically furnishing the results of research projects or experiments.

f. Knowingly furnishing false statements in any University academic proceeding.

Procedure for Handling Academic Dishonesty Cases

Academic dishonesty includes plagiarism; cheating and dishonest practices in connection with examinations, papers, and projects; and forgery, misrepresentation, and fraud. Some cases of forgery, misrepresentation, or fraud which occur outside the context of courses or academic requirements may be referred directly to the University Committee on Student Rights and Responsibilities by any member of the University community. In such cases, the University Committee on Student Rights and Responsibilities will arrange a hearing following the procedure outlined in Step 3 within 15 calendar days of receipt of the charges.

Step 1. If a student is charged with academic dishonesty, the instructor will contact the student in person and/or notify the student in writing of the specifics of the charge within 15 calendar days of the discovery of the offense. The student must respond within five calendar days of the receipt of the notification. If the instructor deter mines the student is guilty, the maximum penalties the instructor may administer are exclusion from the course, a lower grade, and/or an unforgiveable F (not eligible for D/F repeat policy) in the course. The instructor and/or the department chairperson also may recommend to the dean of the college in which the course is offered that additional penalties be imposed on the student. At the discretion of the faculty member or department chairperson, in cases where there is written admission of guilt by the student, the case may be satisfactorily resolved at the departmental level. Whenever a penalty is administered, the facts of the case shall be reported in writing to the dean of the college or school and a copy forwarded to the Office of Judicial Programs for the permanent records. In cases wherein academic dishonesty occurs in a college or school other than that in which the student is enrolled, the results of the case shall be reported to the dean of the college or school in which the student involved is enrolled.

Step 2. If the student denies guilt, if the student believes the penalty imposed in Step 1 is unjust, or if the instructor and/or department chairperson determines the penalties available at Step 1 are insufficient for a specific act, the dean of the college or school in which the course is offered shall be notified in writing of the specifics of the case. The dean shall then implement the following steps within 15 calendar days of receipt of notification:

1. Formal notification to the faculty member that the student is appealing the

penalties imposed in Step 1, or formal notification to the student and faculty member of the charges and nature of evidence which, if proved, would justify additional action.

2. Opportunity for the student, faculty, and witnesses to respond or present evidence in writing to the charges.

3. Review by the dean of the facts and evidence presented, and a determination of the penalty or action, if any, to be applied.

Step 3. If the student wishes to appeal the decision of the dean, the appeal must reach the University Committee on Student Rights and Responsibilities within 30 calendar days of the student's receipt of the dean's decision. The University Committee on Student Rights and Responsibilities will arrange a hearing within 15 calendar days using the following procedures:

1. All parties involved shall receive written notice of the date, time, and place of the hearing.

2. The student may be advised by a person of his/her choice from within the institution; likewise, the academic officer recommending the additional action may have an adviser from within the institution. Such advisers may consult with, but may not speak on behalf of their advisees, or otherwise participate directly in the proceedings unless they are given specific permission by the University Committee on Student Rights and Responsibilities Chairperson.

3. The administrative procedure is not adversarial in nature; the formal rules of evidence do not apply.

4. Witnesses may be called by any of the parties involved.

5. A record of the appeal shall be prepared in the form of summary minutes and relevant attachments and will be provided to any of those involved upon written request.

The University Committee on Student Rights and Responsibilities will reach a decision within seven days of the hearing. If the University Committee on Student Rights and Responsibilities finds the student guilty, it will determine the penalty it deems appropriate under the circumstances and inform all parties involved. The penalty imposed cannot be more severe than the penalty imposed by the dean.

Step 4. Only sanctions of suspension or dismissal invoked or upheld by the University Committee on Student Rights and Responsibilities may be appealed to the President or his/her designee. Such appeals must reach the President's Office within 30 calendar days after receipt of written notice of the decision of the University Committee on Student Rights and Responsibilities. The decision of the President or the President's designee is final.

Part 4 Fees

Fee Regulations

All West Virginia University fees are subject to change. All fees are due and payable to the Controller on the days of registration. Students must pay fees before registration is accepted. Completion of arrangements with the Controller's Office for payment from officially accepted scholarships, loan funds, grants, or contracts shall be considered sufficient for acceptance of registration. Fees paid after regular registration must be paid to the University Cashier in Mountainlair.

All students are expected to register on days set apart for registration at the beginning of each semester or summer session of the University. No student will be permitted to register at the University after the eighth day of a semester or the fourth calendar day of the summer sessions or a single summer session. Days are counted from the first day of registration.

Any student failing to complete registration on regular registration days is subject to the Late Registration Fee of $20.00.

Registering students pay the fees shown in the fee charts, plus special fees and deposits as required.

No degree is conferred upon any candidate and no transcripts are issued to any student before payment is made of all tuition, fees, and other indebtedness to any unit of the University.

It is the policy of West Virginia University to place on restriction students who have outstanding debts to a unit or units of the University. The restriction may include, but is not limited to, the withholding of a student's registration, a student's diploma, or a student's transcript.

Financial Aid

Students interested in financial assistance must file a Financial Aid Form (FAF) with College Scholarship Service, Box 2700, Princeton, NJ 08540. Forms are available at high schools, from the College Scholarship Service, or the WVU Financial Aid Office. Forms are dated for the appropriate academic year.

Your Guide to Financial Aid-West Virginia University is available at the WVU Financial Aid Offices, Mountainlair, Downtown Campus, and 104 Health Sciences Center. The guide describes available financial aid, application procedures, and estimated educational expenses for attending WVU.

Fees for Off-Campus Courses

Fees for credit hours for off-campus courses are the same as those charged students enrolled in on-campus courses. Off-campus students do not pay the Daily Athenaeum Fee, the Radio Station Fee, or the Mountainlair Construction Fee. However, all students must pay a $40.00 course fee for each off-campus course taken except for courses offered by the College of Business and Economics, which is $80.00 per course.

Special Fees

Application for Undergraduate Admission	
(Resident)	$10.00
(Nonresident)	20.00
Application for Admission (Dentistry and Medicine)	30.00
Application for Admission (College of Law or Graduate Studies)	25.00
Certificate of Advanced Study in Education	2.00
Diploma Replacement	20.00
Examination for Advanced Standing	35.00
Examination for Entrance Credit, per unit	1.00
General Educational Development Tests (high school level)	15.00

(If the applicant applies for admission to and registers in WVU within twelve months of the date of qualifying for the test, a $10.00 credit shall be established for the applicant.)

Graduation	20.00
(Payable by all students at the beginning of the semester or session in which they expect to receive their degrees.)	
Late Registration (nonrefundable)	20.00
(Not charged to students who complete registration during the regular registration days set forth in the University Calendar.)	50.00
(For graduate students not otherwise enrolled at time of final exam.)	
Professional Engineering Degree (includes $20.00 Graduation Fee)	35.00
Program Reactivation Fee (Graduate Students)	20.00
Reinstatement of Student Dropped from the Rolls	10.00
Student Identification Card Replacement	10.00
Student's Record Fee	3.00
Official Transcript	3.00
Official Letter	3.00
(Statement of Degree Letter, Grade-Point Average Letter)	5.00
Priority Service (Transcript/Letter)	5.00

Laboratory Fees

Consult specific departmental sections of this catalog concerning nonrefundable deposits and microscope rental fee.

Music Practice and Rental Fees

Practice Room Fee

All music majors must pay a fee of $10.00 per semester, which entitles them to assigned practice space one hour per day. Additional space may be available at the rate of $4.00 per hour.

Band and Orchestra Instruments: Rental, $10.00 per semester.

Service Charge on Returned Checks

A service charge of $10.00 is collected on each check returned unpaid by the bank upon which it was drawn. If the check returned by the bank was in payment of University and registration fees, the Controller's Office shall declare the fees unpaid. Registration is cancelled if the check is not redeemed within three days from date of written notice. In such a case the student may be reinstated when he/she redeems the check, pays the $10.00 service charge, the $10.00 reinstatement fee, and the $20.00 late payment fee.

Summer Tuition and Fees

Undergraduate Students	*Resident*	*Nonresdent*
Tuition, per semester hour	$53.00	$172.00
Daily Athenaeum Fee*	2.00	2.00
Radio Station Fee*	2.00	2.00
Health, Counseling, and Program Services Fee	33.00	33.00
Mountainlair Construction Fee, per 6-week summer session or any portion thereof	* 19.00	19.00
Student Affairs Fee	10.00	10.00
Transportation Fee	17.00	17.00

*Fee required of all students. (Nonrefundable unless student withdraws officially before the close of general registration.)

Semester Fees in Colleges and Schools

(Subject to Change Without Notice.)

These fees as published here are accurate as of March 1, 1990.
You are advised to check with the Office of Admissions and Records for the current fee schedule.

FULL-TIME

Undergraduate

Fee	*Tuition*	*Registration*	*Higher Education Resources*	*Institutional Activity**	*Mountainlair Construction*	*Faculty Improvement*	*TOTAL*	*Part-Time per credit hr.*
Resident	$165.00	$ 50.00	$ 381.00	$207.50**	$50.00**	$ 35.00***	$ 888.50	$ 53.00
Nonresident	535.00	250.00	1,175.00	207.50**	50.00	105.00***	2,322.50	$172.00

A full-time undergraduate student is one who is registered for 12 or more semester hours work each semester of the regular academic year or six or more semester hours of work during a six-week summer session.

A part-time undergraduate student is one who is registered for fewer than 12-semester hours per semester during the regular academic year or for fewer than six semester hours during a six-week summer session.

*Includes Athletics Fee, $40.00; Student Affairs Fee, $26.00; Daily Athenaeum Fee, $4.50; Health, Counseling, and Program Services Fee, $88.00; Transportation Fee, $45.00; Radio Station Fee, $4.00.

**All part-time students enrolled for seven or more credit hours must pay the Institutional Activity Fee and the Mountainlair Construction Fee.

***Faculty Improvement Fee is charged to all students and is prorated for part-time students.

Please refer to the WVU Graduate and Health Sciences catalogs for the appropriate fee information for the graduate and professional levels.

Estimated Expenses For Undergraduate Health Sciences Center Programs (*Subject to Change*)

Tuition and registration are the same for both semesters. Some expenses, such as instruments and books, will be different for the Second Semester.

School or Division	Tuition and Registration Fees (Totals from page 52)		Instruments	Lab Coats, Uniforms etc.	Books	Total	
	Resident	Nonresident				Resident	Nonresident
Dental Hygiene							
Freshman	$1,047.50*	$2,652.50*	$ 285.00	$ 25.00	$225.00	$1,582.50	$3,187.50
Sophomore	1,047.50*	2,652.50*	1,000.00	225.00	255.00	2,527.50	4,132.50
Junior	1,047.50*	2,652.50*	660.00	100.00	425.00	2,232.50	3,837.50
Senior	1,047.50*	2,652.50*	675.00	100.00	200.00	2,022.50	3,627.50
Medical Technology							
Junior	1,047.50*	2,652.50*	159.00	250.00	500.00	1,956.50	3,561.50
Summer	242.00	662.00	_____	250.00	500.00	692.00	1,112.00
Senior	1,047.50*	2,652.50*	_____	225.00	_____	1,272.50	2,877.50
Nursing							
Sophomore	1,047.50*	2,652.50*	40.00	130.00	420.00	1,637.50	3,242.50
Summer	377.00	1,008.00	_____	_____	150.00	527.00	1,158.00
Junior	1,047.50*	2,652.50*	_____	_____	200.00	1,247.50	2,852.50
Senior	1,047.50*	2,652.50*	_____	_____	200.00	1,247.50	2,852.50
Physical Therapy							
Junior	1,047.50*	2,652.50*	90.00	90.00	500.00	1,727.50	3,332.50
Senior	1,047.50*	2,652.50*	_____	70.00	500.00	1,617.50	3,222.50
Summer	46.00	46.00	_____	_____	_____	46.00	46.00

*Includes $200.00 Resident Health Professions Education Fee; Includes $540.00 Non-Resident Health Professions Education Fee.

Non-Sufficient Funds Check Policy

Payments of tuition, fees, and other charges by check are subject to WVU's Non-Sufficient Funds Check Policy. A copy of the policy is available in the Bursar's Office.

Refund of Fees

A student who officially withdraws from University courses may arrange for a refund of fees by submitting to the University Controller evidence of eligibility for a refund during the semester.

To withdraw officially, a student must apply to the Division of Student Affairs for permission. Semester fees will be returned in accordance with the following schedule:

Academic Year (Semester)

Refund

During the first and second weeks	90%
During the third and fourth weeks	70%
During the fifth and sixth weeks	50%
Beginning with the seventh week	No Refund

Summer Sessions and Non-Traditional Periods

Refunds for summer sessions and non-traditional periods are established based upon the refund rate for the academic year. For specific information concerning summer session refunds, see the appropriate *Summer Schedule of Courses*. Should the percentage calculation identify a partial day, the entire day will be included in the higher refund period.

No part of the Activity Fee is refundable unless the student withdraws from the University.

University policy provides that students called to the armed services of the United States may be granted full refund of refundable fees, but no credit if the call comes before the end of the first three-fourths of the semester, and that full credit of courses be granted to persons called to the armed services of the United States if the call comes thereafter; provided, however that credit as described above will be granted only in those courses in which the student is maintaining a passing mark at the time of departure for military service. In the recording of final grades, for three-fourths of a semester or more, both passing and failing grades are to be shown on the student's permanent record.

Cost of an Academic Year's Work

The Student Financial Aid Office estimates that the total cost of attending WVU for a nine-month academic year is $7,850 for single West Virginia residents living on campus, $8,100 for single West Virginia residents living off campus, and $5,100 for those living at home.

The total cost for single non-residents living on campus is $10,700; for single non-residents living off campus, $10,950; and for non-residents living at home, $7,950. These typical estimated student budgets include tuition and fees, books and supplies, room, board, transportation, and personal expenses to provide a modest but adequate life-style.

Identification Card

An identification card is issued to each full-time student when fees are paid in full. It admits the owner to certain University athletic events, various activities of student administration, Health Service, and Mountainlair. Confiscation will result from misuse. The University reserves the right to refuse reissuance of an identification card.

Policy Regarding Residency
Classification Of Students for Admission and Fee Purposes

Section 2. Classification for Admission and Fee Purposes

2.1 Students enrolling in a West Virginia public institution of higher education shall be assigned a residency status for admission, tuition, and fee purposes by the institutional officer designated by the president. In determining residency classification, the issue is essentially one of domicile. In general, the domicile of a person is that person's true, fixed, permanent home and place of habitation. The decision shall be based upon information furnished by the student and all other relevant information. The designated officer is authorized to require such written documents, affidavits, verifications, or other evidence as is deemed necessary to establish the domicile of a student. The burden of establishing domicile for admission, tuition, and fee purposes is upon the student.

2. 2 If there is a question as to domicile, the matter must be brought to the attention of the designated officer at least two weeks prior to the deadline for the payment of tuition and fees. Any student found to have made a false or misleading statement concerning domicile shall be subject to institutional disciplinary action and will be charged the nonresident fees for each academic term theretofore attended.

2. 3 The previous determination of a student's domiciliary status by one institution is not conclusive or binding when subsequently considered by another institution; however, assuming no change of facts, the prior judgment should be given strong consideration in the interest of consistency. Out-of- state students being assessed resident tuition and fees as a result of a reciprocity agreement may not transfer said reciprocity status to another public institution in West Virginia.

Section 3. Residence Determined by Domicile

3.1 Domicile within the State means adoption of the State as the fixed permanent home and involves personal presence within the State with no intent on the part of the applicant or, in the case of a dependent student, the applicant's parent(s) to return to another state or country. Residing with relatives (other than parent(s)/legal guardian) does not, in and of itself, cause the student to attain domicile in this State for admission or fee payment purposes. West Virginia domicile may be established upon the completion of at least twelve months of continued presence within the State prior to the date of registration, provided that such twelve months' presence is not primarily for the purpose of attendance at any institution of higher education in West Virginia. Establishment of West Virginia domicile with less than twelve months' presence prior to the date of registration must be supported by evidence of positive and unequivocal action. In determining domicile, institutional officials should give consideration to such factors as the ownership or lease of a permanently occupied home in West Virginia, full-time employment within the State, paying West Virginia property tax, filing West Virginia income tax returns, registering of motor vehicles in West Virginia, possessing a valid West Virginia driver's license, and marriage to a person already domiciled in West Virginia. Proof of a number of these actions shall be considered only as evidence which may be used in determining whether or not a domicile has been established. Factors militating against the establishment of West Virginia domicile might include such considerations as the student not being self-supporting, being claimed as a dependent on federal or state income tax returns or the parents' health insurance policy if the parents reside out of state, receiving financial assistance from state student aid programs in other states, and leaving the State when school is not in session.

Section 4. Dependency Status

4.1 A dependent student is one who is listed as a dependent on the federal or state income tax return of his/her parent(s) or legal guardian or who receives major

financial support from that person. Such a student maintains the same domicile as that of the parent(s) or legal guardian. In the event the parents are divorced or legally separated, the dependent student takes the domicile of the parent with whom he/she lives or to whom he/she has been assigned by court order. However, a dependent student who enrolls and is properly classified as an in-state student maintains that classification as long as the enrollment is continuous and that student does not attain independence and establish domicile in another state.

4. 2 A nonresident student who becomes independent while a student at an institution of higher education in West Virginia does not, by reason of such independence alone, attain domicile in this State for admission or fee payment purposes.

Section 5. Change of Residence

5.1 A person who has been classified as an out-of-state student and who seeks resident status in West Virginia must assume the burden of providing conclusive evidence that he/she has established domicile in West Virginia with the intention of making the permanent home in this State. The intent to remain indefinitely in West Virginia is evidenced not only by a person's statements, but also by that person's actions. In making a determination regarding a request for change in residency status, the designated institutional officer shall consider those actions referenced in Section 2 above. The change in classification, if deemed to be warranted, shall be effective for the academic term or semester next following the date of the application for reclassification.

Section 6. Military

6.1 An individual who is on full-time active military service in another state or foreign country or an employee of the federal government shall be classified as an in-state student for the purpose of payment of tuition and fees, provided that the person established a domicile in West Virginia prior to entrance into federal service, entered the federal service from West Virginia, and has at no time while in federal service claimed or established a domicile in another state. Sworn statements attesting to these conditions may be required. The spouse and dependent children of such individuals shall also be classified as in-state students for tuition and fee purposes.

6.2 Persons assigned to full-time active military service in West Virginia and residing in the State shall be classified as in-state students for tuition and fee purposes. The spouse and dependent children of such individuals shall also be classified as in-state students for tuition and fee purposes.

Section 7. Aliens

7.1 An alien who is in the United States on a resident visa or who has filed a petition for naturalization in the naturalization court, and who has established a bona fide domicile in West Virginia as defined in Section 3 may be eligible for in-state residency classification, provided that person is in the State for purposes other than to attempt to qualify for residency status as a student. Political refugees admitted into the United States for an indefinite period of time and without restriction on the maintenance of a foreign domicile may be eligible for an in-state classification as defined in Section 3. Any person holding a student or other temporary visa cannot be classified as an in-state student.

Section 8. Former Domicile

8.1 A person who was formerly domiciled in the state of West Virginia and who would have been eligible for an in-state residency classification at the time of his/her departure from the state may be immediately eligible for classification as a West Virginia resident provided such person returns to West Virginia within a one-year period of time and satisfies the conditions of Section 3 regarding proof of domicile and intent to remain permanently in West Virginia.

Section 9 Appeals

At a minimum, such procedures shall provide that:

9.1.1a The institutional committee on residency shall be comprised of members of the institutional community, including faculty and student representatives, and whose number shall be at least three, in any event, an odd number. The student representative(s) shall be appointed by the president of the institutional student government association while the faculty representative(s) shall be selected by the campus-wide representative faculty organization.

9.1.1b The student contesting a residency decision shall be given the opportunity to appear before the institutional committee on residency appeals. If the appellant cannot appear when the committee convenes a meeting, the appellant has the option of allowing committee members to make a decision on the basis of written materials pertaining to the appeal or waiting until the next committee meeting.

9.1.2 The residency appeal procedures will include provisions for appeal of the decision of the institutional committee on residency appeals to the president of the

9.1.3 Residency appeals shall end at the institutional level.

College of Agriculture and Forestry

Robert H. Maxwell, Ph.D., Dean; Director of the Agricultural and Forestry Experiment Station
Kenneth D. McIntosh, Ph.D., Associate Dean, Academic Affairs
Alfred L. Barr, Ph.D., Associate Director, Agricultural and Forestry Experiment Station
Paul E. Lewis, Ph.D., Chairperson, Division of Animal and Veterinary Sciences; Professor of Reproductive Physiology.
Beverly Z. Hummel-Azzaro, Ph.D., Chairperson, Division of Family Resources; Assistant Professor of Recreation and Parks.
Jack E. Coster, Ph.D., Chairperson, Division of Forestry; Professor of Forest Entomology.
Layle Lawrence, Ph.D., Chairperson, Division of International Agriculture and Forestry; Professor of Agricultural Education.
Barton S. Baker, Ph.D., Chairperson, Division of Plant and Soil Sciences; Professor of Agronomy.
Virgil J. Norton, Ph.D., Chairperson, Division of Resource Management; Professor of Agricultural and Resource Economics.

Degrees and Curricula

The College of Agriculture and Forestry offers six baccalaureate degrees and twelve curricula in which students may major. The degrees and curricula are:

Bachelor of Science (B.S.)
- Animal and Veterinary Sciences Curriculum
- Resource Management Curriculum
- Wildlife and Fisheries Resources Curriculum

Bachelor of Science in Agriculture (B.S.Agr.)
- Agricultural Education Curriculum
- Animal and Veterinary Sciences Curriculum
- Plant and Soil Sciences Curriculum
- Resource Management Curriculum

Bachelor of Science in Family Resources (B.S. Fam. Res.)

Bachelor of Science in Forestry (B.S.F.)
- Forest Resources Management Curriculum
- Wood Industries Curriculum

Bachelor of Science in Landscape Architecture (B.S.L.A.)
- Landscape Architecture Curriculum

Bachelor of Science in Recreation (B.S.R.)
- Recreation and Parks Management Curriculum

Information about graduate degrees and programs is available in the *West Virginia University Graduate Catalog.*

Nature of Program

The College of Agriculture and Forestry is divided into six divisions of study: Animal and Veterinary Sciences, Family Resources, Forestry, Plant and Soil Sciences, Resource Management, and International Agriculture and Forestry. The college's faculty and staff are located in three major buildings on the Evansdale Campus, on four farms owned by the College of Agriculture and Forestry in the Morgantown area, and in nearby Coopers Rock State Forest.

Students in the college are offered fields of study which complement various careers. Emphasis can be placed on the biological sciences, animals, nutrition, plants, trees or soils; child development or home economics education; or emphasis might be on the social sciences related to resource management or recreation, or on the artistic development of landscapes, interior design or fashion merchandising. In short, the college and its curricula stress applied ecology, man-made structures, and relationships among humans as they live and work in various environments. The student of agriculture and forestry studies many different subjects concerned with human behavior, plants, animals, and microbes that interrelate with and affect our environ-

ment. The study of ecology, then, is interwoven throughout the courses offered in the college to give the student a comprehensive understanding of the basic elements at work in our environment.

Such emphasis on ecology is designed to offer students the education necessary for careers emphasizing the protection of environmental quality and the management, utilization, and conservation of our soil, water, forests, wildlife, domestic animals, our food and our fiber.

The college, too, is the site of the state's Agricultural and Forestry Experiment Station, so the University maintains extensive land for research purposes. This land is divided into areas devoted to dairy, livestock, poultry, forestry, wildlife, horticulture, agronomy, and soils. Students and professors use these areas regularly for instruction and research, and information generated at these holdings is used to update subject matter in the classroom.

Accreditation

The programs offered by the College of Agriculture and Forestry are accredited by the American Society of Landscape Architecture, Society of American Foresters and the National Recreation and Parks Association.

Honoraries and Student Associations

Students in the College of Agriculture and Forestry are encouraged to become active in student associations. Those students with sufficiently impressive grade-point averages may be selected for membership in Phi Kappa Phi, the University-wide honorary for excellence in scholarship, or Gamma Sigma Delta and Alpha Zeta, honoraries specific to Agriculture and Forestry.

Admission

Graduates of accredited high schools are required to present credit for four units of English; one unit of biology; three units of social studies; two units of college preparatory mathematics, of which one unit must be algebra; eight units chosen from the areas of fine arts, science, mathematics, computer science, foreign languages, and communication. In addition, agriculture and forestry require one unit of geometry. Students who wish to major in areas of animal sciences, family resources, forestry, plant sciences, or resource management are admitted directly into the College of Agriculture and Forestry.

Applicants desiring admission to the landscape architecture program should check admission requirements with the associate dean's office of the College of Agriculture and Forestry or the WVU Office of Admissions and Records.

Transfer Credits

Students transferring into the College of Agriculture and Forestry from one or two-year technical programs, or from unaccredited programs, must take examinations to demonstrate proficiency for any required course offered by the College of Agriculture and Forestry for which transfer credit is sought. In addition, the Division of Forestry applies this rule to dendrology and surveying. All other credits are accepted subject to the regulations of the Office of Admissions and Records.

Credit Load Per Semester

To be considered a full-time student in the College of Agriculture and Forestry, students must enroll for a minimum of 12 credit hours per semester. The maximum work per semester is 20 credit hours.

Students may petition the College's Academic Standards Committee to reverse a decision rendered by the student's adviser.

Assigned Topics/Independent Study

A maximum of 12 credit hours for courses titled *Assigned Topics* or *Independent Study* may be counted toward fulfilling the requirements for a bachelor's degree in the College of Agriculture and Forestry.

Honors

The College recognizes outstanding academic achievement by awarding President's and Dean's Lists status to those students obtaining a 4.0 grade-point average or 3.4 grade-point average, respectively. Students must be enrolled full time to be eligible for the President's or Dean's List in any one semester.

Students may receive summa cum laude, magna cum laude, or cum laude recognition upon graduation by earning the overall grade-point average as set forth by University regulations.

Applications for Graduation

All candidates for the bachelor's degree in the College of Agriculture and Forestry must fill out an application for graduation in room 1002 of the Agricultural Sciences Building at the beginning of the semester in which they expect to receive their degrees.

Grade-Point Deficiencies

Academic Warning

A student with a grade-point average less than 2.0 at the end of a period of enrollment shall be placed on academic warning. Students on academic warning shall be limited to a maximum of 15 credit hours per semester. Students shall be notified in writing of their academic status by the associate dean.

Academic Probation

Students who have been reinstated after suspension and students who have transferred from another college with less than a 2.0 grade- point average shall be placed on academic probation until the grade-point deficiency is reduced to a level less than the maximum allowable without suspension. At such time the student will be reassigned to an adviser by the appropriate division chairperson. While on academic probation, a student shall be required to maintain a minimum grade-point average of 2.25 in order not to be suspended. The associate dean's office shall serve as adviser to all students on academic probation.

Academic Suspension and Probation

Students whose grade-point average is below that allowed by WVU at the end of a period of enrollment shall be suspended by the College of Agriculture and Forestry and notified in writing by the associate dean. Students may be reinstated by petitioning the Academic Standards Committee to:

1. Enroll for the summer session to eliminate the grade-point deficiency.
2. Re-enroll according to regulations as set forth by the University and by the Academic Standards Committee.
3. After one calendar year a student may enroll in the college, school, or program of his/her choice but under conditions of probation as set forth by the college, school, or program where the student is enrolled.

Students reinstated will be placed on academic probation and may enroll for a maximum of 15 credit-hours and maintain a minimum 2.25 grade-point average for each semester enrolled. The Academic Standards Committee has the option to reduce the hours taken and increase the grade-point average of students on academic probation.

Division of Animal and Veterinary Sciences

Paul E. Lewis, Ph.D., Chairperson.

Programs of Study

As a student in this division, you may work toward a degree which enables you to do graduate work, go into commercial agriculture, or work for federal or state agencies, the food processing industry, or other areas of food and agriculture. The pre-professional program meets requirements for entry into professional colleges. Many pre-professional students obtain their bachelor degrees after three years of pre-professional study and one year of professional study.

Courses that you will take in the division include agricultural biochemistry, animal production, breeding and genetics, food science, nutrition, pathology, and physiology. To assist in equipping yourself for one of the many varied careers in animal agriculture, you will take supporting courses in other divisions of the College of Agricultureand Forestry and in other colleges. The programs are flexible enough to permit you to obtain a broad background and take sufficient courses in one area during the last two years to prepare for your first job.

Bachelor of Science in Agriculture
Animal and Veterinary Sciences Curriculum

This curriculum will provide you with the opportunity to acquire the necessary background in agricultural economics, agronomy, breeding, nutrition, pathology and physiology to prepare for a career in animal, dairy, or poultry production and management. Food sciences courses are available under the curriculum if you are interested in preparing for opportunities in food processing related to dairy, poultry, and meat products.

Curriculum Requirements	Hours
English Composition and Rhetoric (or conformity with University English requirements)	6
Arts and Humanities (Cluster A)	12
Social and Behavioral Sciences (Cluster B)	12
Natural Sciences (Cluster C included) (Must elect a minimum of eight credits in biology; eight credits in chemistry; three credits in college algebra or equivalent.)	24
Courses in Agriculture	45
Elect a minimum of a three credit course, excluding *Assigned Topics*, in each of the following: 1. Animal Science; 2. Plant Science; 3. Soil Science; 4. Agricultural Economics. Elect additional courses to obtain a total of 45 hours in the College of Agriculture and Forestry.	
Free electives	37
Total	135

Bachelor of Science
Animal and Veterinary Science Curriculum

The curriculum in science, with its flexible design, provides you with the opportunity to acquire the necessary background in agricultural biochemistry, chemistry, mathematics, physics, and modern concepts of biology in preparation for professional schools of veterinary medicine, human medicine, dentistry, optometry, pharmacy, or

graduate study in such fields as agricultural biochemistry, animal breeding, animal physiology, and nutrition. Selection of individual courses will be your responsibility in consultation with an adviser.

Curriculum Requirements	Hours
English Composition and Rhetoric	6
(or conformity with University English requirements)	
Liberal Studies Program	
Arts and Humanities (Cluster A)	12
Social and Behavioral Sciences (Cluster B)	12
Natural Sciences (Cluster C included)	40
(A minimum of two courses in each of biology, chemistry, physics, and calculus is required. You may substitute advanced chemistry courses for calculus to meet degree requirements. This ordinarily means organic chemistry and/or biochemistry).	
Courses in Agriculture	24
Free Electives	34
Total	128

Pre-Veterinary Medicine Program

This program is designed to provide you with the academic requirements for entry into professional schools or colleges of veterinary medicine. West Virginia University has agreements with the Ohio State University and with the Southern Regional Education Board. In order to qualify for these positions, you must have been a West Virginia resident for at least the past five years at the time of application. Applicants for admission to these colleges of veterinary medicine must present at least 78 semester hours of acceptable credit. Since a maximum of thirteen eligible students are accepted each year, alternate goals in either of the other degree programs are urged for all pre-professional students.

Applicants with a grade-point average of 3.0 or above will be given first consideration for admission to these institutions.

If you have completed 90 hours of course work at WVU, or 90 hours at institutions within the West Virginia state system of higher education, including at least 36 at WVU, and have completed all required courses for the degree, you may transfer credit from a veterinary college to WVU and receive the bachelor's degree.

The equivalent of the following pre-professional courses currently meet requirements for contract colleges of veterinary medicine.

Curriculum Requirements	Hours
Agricultural Orientation	2
Animal and Poultry Science	6
Animal Nutrition	3
Biochemistry	4
Biology	8
Chemistry (inorganic)	8
Chemistry (organic)	8
English	6
Mathematics	6
Microbiology	4
Physics	8
Principles of Heredity	4
Total *	67

*Students are urged to consult their advisers for current requirements of individual veterinary colleges. Faculty

Examples of Suggested Curricula

These suggested curricula are for the two degree programs in the Division of Animal and Veterinary Science. Actual schedules would vary for individual students and their specific career goals. Schedules are determined in consultation with an academic adviser. All courses referenced here are listed in alphabetical order in the final section of this catalog.

Animal and Veterinary Science (B.S.)

First year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chemistry 15*	4	Chemistry 16	4
Biology 1 & 3 or 15	4	Biology 2 & 4 or 16	4
English 1	3	Cluster A	3
Math 3 or 14 or 15*	3-4	Math 4 or Cluster B	3
Agriculture 11	1	Animal and Vet. Science 50	2
	15-16		16

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chemistry 133, 135	4	Chemistry 134, 136	4
Physics 1	4	Physics 2	4
English 2	3	Cluster A	3
Cluster B	3	Cluster B	3
Animal & Vet. Science 51	4	Animal Nutrition 101	3
	18		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Ag.Bio. 210, 211	4	Genetics 171	4
Ag. Microbiology 141	4	Cluster A	3
Animal Physiology 100	3	Cluster B	3
An. Production 140** or Elect.	3	Animal Physiology 200 or 225	3
Cluster A	3	Elective	0-3
	17		16-19

Fourth Year

Electives are chosen in consultation with your academic advisor.

*Depending upon placement examination results.

**An. Pro. 140 *Poultry Production* meets requirement for Tuskegee Institute Veterinary College.

Animal and Veterinary Science (B.S. Agriculture)

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chemistry 15	4	Chemistry 16	4
Biology 1 & 3	4	Biology 2 & 4	4
English 1	3	Cluster A	3
Math 3, 4, 14, or 15*	3-4	Cluster B	3
Agriculture 11	1	Animal and Vet. Science 50	2
	15-16		16

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Animal and Vet. Science 51	4	Plant Science 52	4
English 2	3	Computer Science 5	4
Economics 54	3	Agronomy 2	3
MDS 90	3	Animal Nutrition 101	3
Cluster A	3	Cluster B	3
An. Production 18	1		
	17		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
An. Physiology 100	3	An. Physiology 200 or 225	3
Cluster A	3	Cluster A	3
Cluster B	3	Vet. Science 102	3
An. Production	3	Ag. Economics 104	3
Electives	6	An. Production	3
Elective	3		
	18		18

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
An. Production 2	6	Elective	6
Food Science 166	3	An. Production	3
Animal & Vet. Science 195	1	Animal & Vet. Science 200	3
An. Physiology 226	3	An.Physiology 200 or 225	3
Elective	4-8		
	13-21		15

* Depends on placement test results.

Faculty

Professors

Paul E. Lewis, Ph.D. (WVU). Chairperson, Animal & Veterinary Sciences. Reproductive physiology.
Gerald C. Anderson, Ph.D. (U. Mo.). *Emeritus.*
William E. Collins, Ph.D. (U. Wisc.). Reproductive physiology.
C. Jett Cunningham, B.S. (VPI&SU). *Emeritus.*
Robert A. Dailey, Ph.D. (U. Wisc.). Reproductive physiology.
William H. Hoover, Ph.D. (Penn St. U.). Animal nutrition.
Donald J. Horvath, Ph.D. (Cornell U.). Animal nutrition and physiology.
E. Keith Inskeep, Ph.D. (U. Wisc.). Reproductive physiology.
William G. Martin, Ph.D. (WVU). Nutritional biochemistry.
Marvin R. McClung, Ph.D. (Iowa St. U.). *Emeritus.*

Norman O. Olson, D.V.M. (Wash. St. U.). *Emeritus.*
Edward C. Prigge, Ph.D. (U. Maine). Animal nutrition.
Robert L. Reid, Ph.D. (Aberdeen U.). Ruminant nutrition.
James A. Welch, Ph.D. (U. Ill.). *Emeritus.*
Dale W. Zinn, Ph.D. (U. Mo.). Director-at-Large, Northeast Agricultural Experiment Station. Food sciences.

Associate Professors
Harold M. Hyre, M.S. (Cornell U.). *Emeritus.*
W. Byron Moore, M.S. (WVU). *Emeritus.*
Phillip I. Osborne, Ph.D. (Clemson U.). Extension Specialist. Livestock marketing and production.
Ronald A. Peterson, Ph.D. (Mich. St. U.). Nutritional-physiology-poultry.
LeRoy P. Stevens, M.S. (WVU). Animal science.
Roy O. Thomas, Ph.D. (Mich. St. U.). *Emeritus.*
Wayne R. Wagner, Ph.D. (Colo. St. U.). Extension Specialist. Animal breeding and genetics.

Assistant Professors
Hillar Klandorf II, Ph.D. (Br. Coun. Nat'l. Academic). Nutrition. Physiology.
Stephen P. Lerner, Ph.D. (WVU). Reproductive physiology.
J. Robert McCurley, Ph.D. (U. Tenn.). Animal breeding and genetics.
Thomas P. Oscar, Ph.D. (N.C. St. U.). Physiology/Nutrition.
Richard W. Russell, Ph.D. (Iowa St.). Ruminant Nutrition.
Paul M. Smith, M.S. (WVU). Food sciences.

Division of Family Resources

Beverly Z. Hummel-Azzaro, Ph.D., Chairperson.

5

Degree Program:
Bachelor of Science in Family Resources
Areas of Emphasis
Child Development and Family Studies
Home Economics Education
Human Nutrition and Foods
Interior Design and Housing
Textiles, Clothing and Fashion Merchandising

Historical Background

A program similar to the Division of Family Resources has been a part of West Virginia University since its inception and initially was called domestic arts and later home economics. Over the years, the unit has evolved from a focus on the needs of rural families to a program that helps to meet the demands of today's contemporary society.

Mission

The mission of this division is to improve the quality of life for individuals and their families. Students prepare for professional careers in each of the five program areas: Child Development and Family Studies; Home Economics Education; Human Nutrition and Foods, including Dietetics and Restaurant/Food Service Management; Interior Design and Housing; and Textiles, Clothing, and Fashion Merchandising. Careers available to graduates are many and varied. Each program area advises students on current market conditions and employment opportunities.

Accreditation

Institutional approval for teacher education has been granted by the National Council for Accreditation of Teacher Education (NCATE), for grades 5 through 12 in Home Economics.

Honorary Societies

Phi Upsilon Omicron

Student Professional Organizations that focus on the areas of specialization include:

American Society of Interior Designers (Student Chapter)
Fashion Business Association
Student Dietetic Association
West Virginia Association for Young Children

Each of these organizations provides service activities, social events, and extended learning opportunities including field trips and guest speakers.

Admission Requirements

Admission requirements are the same as those for admission to West Virginia University.

Graduation Requirements

The degree of Bachelor of Science in Family Resources is granted following completion of a minimum of 129 hours. In addition to English 1 and 2, Math 3 or higher, liberal studies, and minority, foreign culture or gender and writing requirements, the student completes a core of 12 hours in Family Resources. The remainder of the requirements are presented in the program area sections.

Child Development and Family Studies

Faculty

Professor

Wanda K. Franz, Ph.D. (WVU). Human development, Cognitive development, Parenting, Family life certification.

Assistant Professors

Vicki Loyer-Carlson, Ph.D. (Or. St. U.). Relationship development and dissolution, Family interaction, Families with special needs children.

Dottie D. Rauch, M.Ed. (Penn St. U.). Family studies, Family resource management.

Clinical Associate Professor

Barbara G. Warash, M.S. (Fla. St. U.). Director of the Child Development Laboratory (Nursery School). Preschool curricula, Emergent literacy development, Preschool computer usage.

Program Objectives

The purpose of the program is to prepare persons interested in working with children and families. This includes emphasis in:

- the development of the individual (cognitive, physical, social and emotional
- family development and human relations (development, interaction, and dissolution)
- parenting (processes and strategies)

Students may work in the Child Development Laboratory (Nursery School) to improve skills needed in careers with young children and families.

Areas of Emphasis

Child Care
Child Development
Family Studies/Parenting Education

Special Opportunities

Practical work experiences are available in the Child Development Laboratory, Ruby Memorial Hospital Pediatrics Unit and Neonatal Intensive Care Unit, Klingberg Center, and/or community parenting programs.

Career Prospects

Graduates of the program work with children in a variety of settings including day care, Head Start, nursery schools, clinics, hospitals, and social service agencies. They also work with parents in educational settings. An emphasis in Child Development and Family Studies provides a foundation for graduate work in a variety of social service areas.

Suggested Curricula
Child Development and Family Studies

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 1	3	CD&FS 12	3
Biol. 1	4	Psych. 1	3
CD&FS 10	3	Comm. 11, 12	3
Math.	3	PPE 75	3
Cluster A	3	Elective	3
	16		15

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 2	3	HN&F 71	3
So. Wk. 51	3	CS 5	4
Soc. 1	3	Soc. 125	3
CD&FS 110	3	CD&FS 112	3
Rc. & Pk. 43	3	Cluster A	3
	15		16

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Psych. 141	3	HMFE 160	3
CD&FS 216	4	Comm. 106	3
HMFE 165	3	Soc. & A. 140	3
Rel. 150	3	FAMR 194	3
Comm. 105	3	Cluster A	3
	16		15

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Sp. Ed. 250	3	CD&FS 213	3
FAMR 194	3	CD&FS 215	3
HMFE 165	3	HEED 281	3
CD&FS 214	3	Soc. 133	3
Electives	6	Electives	6
	18		18

Child Care and Development

FirstYear

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 1	3	CD&FS 10	3
Biol. 1	4	Elective	4
CD&FS 12	3	Comm. 11 & 12	3
Math.	3	GPE 40	2
Cluster A	3	Cluster B	3
	16		15

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 2	3	HN&F 71	3
Music 41	3	CS 5	4
So. Wk. 51	3	Art 3	3
CD&FS 110	3	CD&FS 112	3
Psych. 1	3	Cluster A	3
	15		16

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Psych. 141	3	HMFE 160	3
CD&FS 216	4	Ed.P. 105	3
HMFE 165	3	Soc. & A. 140	3
Elective	3	FAMR 194	3
Cluter A	3	Elective	3
	16		15

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Sp. Ed. 250	3	CD&FS 215	3
C&I 210	3	C&I 211	3
CD&FS 212	3	HEED 281	3
L. Sci. 203	3	SPA 250	3
Theat. 282	3	FamR 194	3
Elective	3	Elective 3	6
	18		18

Home Economics Education

Faculty

Associate Professor

Marian B. Liddell, Ed.D. (WVU). Curriculum, Instruction, Supervision, and Communication.

Assistant Professor

Dottie D. Rauch, M.Ed. (Penn St. U.). Family Studies, Family Resource Management.

Program Objectives

The program in home economics education prepares students for careers as teachers of home economics in grades 5-8 and 7-12.

Special Admission Requirements

Freshmen meeting the WVU admission requirements enter the Division of Family Resources as home economics education majors. At the junior year, student admission into the certified vocational home economics program requires attainment of

a passing score on the Pre-Professional Skills Test (PPST) and an overall average of 2.5. Prior to admission into the student teaching field experience, students must attain a passing score on the Content Specialization Examination.

Areas of Emphasis

Vocational Home Economics

Grades 5-8 (one content area, one developmental level; for elementary teachers seeking additional content fields)

Grades 5-8 and 9-12 (one content area and two developmental levels)

The teacher education program at West Virginia University is approved by the National Council of Accreditation for Teacher Education (NCATE).

Special Opportunities

Field experience placements occur in a variety of school settings from rural to suburban communities.

Career Prospects

Career opportunities in extension services, business, and journalism offer avenues of employment in addition to areas such as family finance, education and general home economics. Teachers may be employed at the middle, junior, and secondary school levels.

Home Economics Education

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 1*	3	Engl. 2*	3
GPE 1*	1	C&I 7*	2
Art, Music, or Theat. 30*	3	Relig., Phil., Hum., Engl., Lingu., FLIT*	3
Cluster B*	3	Soc. Studies Elective*	3
ID&H 31	3	CD&FS 10**	3
TX&CL 27	3	Soc. & A. or MDS*	3
	16		17

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Literature*	3	HN&F 71	3
Math.*	3	CD&FS 112	3
CD&FS 12	3	ID&H 33	3
TX&CL 121	3	GPE	1
History*	3	Cluster C*	4
Ed.P. 103*	3	Ed.P. 104*	3
	18		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Cluster A*	3	TX&CL 124	3
Cluster C*	3	HMFE 281	3
HMFE 161	3	HEED 278	3
HN&F 55	4	HN&F 151	4
HEED 175***	3	Rdng. 222	2
		HMFE 165**	3
	16		18

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
HMFE 167	3	Ag. Ed. 188	8
CD&FS 212	3	C&I 188*	4
Cluster C	3	C&I 280	3
HEED 281**	3	C&I 104*	4
	16		15

*Professional Education Courses
**Family Resources Core
***Substitutes for HMFE 160

Human Nutrition and Foods

Faculty

Professors

Mary K. Head, Ph.D., R.D., C.H.E. (Purdue U.). Experimental foods, Applied human nutrition, Food and dietary evaluation.

M. Zafar Alam Nomani, Ph.D., R.D. (Rutgers U.). Dietary fiber, Cholesterol, Protein and energy metabolism, Nutritional assessment and International nutrition.

Assistant Professors

Said Ladki, M.S. (U.W.—Stout). Business, Hotel/restaurant management and tourism development. Visiting.

Wendy Stuhldreher, Ph.D., R.D. (U. Pitt.). Nutritional epidemiology, Cholesterol lowering, Maternal and child health, Cardiovascular disease, Diabetes

Instructor

Betty A. Forbes, M.A., R.D. (WVU). Normal, community, and clinical nutrition.

Program Objectives

Students graduating from the human nutrition and foods program have been prepared to demonstrate basic competence in all areas of dietetic practice and/or restaurant and food service management.

Area of Emphasis

Dietetics
Restaurant and Food Service Management

Career Prospects

Career prospects in nutrition are varied. As dietitians, students will find opportunities in hospital and community settings, as well as in business, industry or the private sector. In the area of restaurant and food service management, students may choose from administrative positions with major food management corporations or pursue entrepreneurial goals.

A major in human nutrition and foods provides a foundation for postgraduate work. Those students emphasizing dietetics may continue with academic careers in nutrition, biochemistry, exercise physiology, pharmacy, public health or medicine, while students in restaurant and food service management may pursue degrees in law or business administration. Students completing the Plan IV Program (approved by the American Dietetic Association) will be eligible for dietetic internships and approved practice programs leading to registration as a dietitian.

Suggested Curriculum

Students receive academic training in nutrition, food science, physiology, microbiology, and biochemistry as well as management, accounting, economics, and

basic food service and restaurant management. During the first two years, they complete two semesters of English, college algebra, two semesters of inorganic chemistry, organic chemistry, biology, two Family Resources core courses, a prescribed set of Cluster A and B courses and beginning food science and nutrition courses.

Students in the Restaurant and Food Service Management option receive academic training in business and basic management as well as food science, nutrition, food service, and restaurant operations. In addition, courses will include marketing, sales, and computer science. Students must fulfill requirements for upper division courses in the College of Business and Economics.

Human Nutrition and Foods Requirements (Dietetics—Plan IV)

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 1	3	Chem. 16	4
Math.	3	HN&F 71	3
Soc. & A. 5	3	Comm. 21	3
CD&FS. 10	3	Psych. 1	3
Chem. 15	4	Elective*	3
	16		16

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engl. 2	3	Chem. 131	4
Biol. 2	4	HN&F 151	4
HN&F 172	3	Physi. 141	4
HN&F 55	4	HMFE 160	3
HMFE 165	3	Cluster A	3
	17		18

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Cluster A	3	Bus. A. 120	3
HN&F 272	3	HN&F 274	3
HN&F 153	4	HN&F 257	3
Bio. Ch. 139	5	Psych. 151	3
CS 5	4	Stat. 101	3
	19		15

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
HN&F 179	1	HN&F 279	1
HN&F 260	3	HN&F 254	4
Ag. Mi. 141	4	HEED 281	3
Ag. Ec. 10	4	Econ. 51	3
Cluster A	3	Elective	3
	15		14

Interior Design and Housing

Faculty

Assistant Professors

Michelle R Brown, M.A., I.D. (U. Ky.). Drafting, Space planning, Lighting, Materials and structures, Professional business practices.

William H. Hagerty, M.A. (WVU). Introduction to interior design, Interior design graphics, Residential design, Issues and ethics.

Christine Myres, M.S. (Fla. St. U.). History of interiors, lighting, materials, and structures, Contract design, Advanced drafting.

Program Objectives

The program prepares students for the profession of interior design in order to perform the following:

- Identify, research, and creatively solve problems pertaining to the function and quality of the interior environment;
- Perform services relative to interior spaces, including programming, design analysis, space planning, and aesthetics, using specialized knowledge of interior construction, building codes, equipment, materials, and furnishings; and
- Prepare drawings and documents in relation to the design of interior spaces in order to enhance and protect the health, safety, and welfare of the public.

Areas of Emphasis

Residential design
Contract design

Special Opportunities

Among the special opportunities enjoyed by students in interior design and housing are the various tours and trips sponsored by the student professional organization, ASID. ID&H 239 Interior Design Field Experience is a course for seniors in the program. It is essentially an internship in which students learn and work in a professional environment with practicing designers. There is also the opportunity to enter student design competitions.

Career Prospects

Career prospects for graduates in interior design and housing are wide ranging. Depending upon the individual's choice of electives and personal plans, career goals may include any of the following:

Residential, commercial or contract designer
Facilities planner
Manufacturer's representative for interior products
Display designer
Design consultant
Renderer of interior spaces
Specification writer

Suggested Curriculum	Hours
English Composition and Rhetoric; Math (to conform with University requirements)	9
Liberal Studies	
Cluster A	12
Cluster B	12
Cluster C	12
Division Core Requirements	12
Required Courses in Interior Design	47
Required Courses in Business	9
Additional Requirements	12
Electives	7
Total	132

Textiles, Clothing and Fashion Merchandising

Faculty

Professor

Nora M. MacDonald, M.S. (Iowa St. U.). Apparel design, Clothing for special needs, Fashion merchandising.

Associate Professor

Janice I. Yeager, M.S. (U. Ill.). Textile science, Textiles for interiors, Fashion merchandising.

Assistant Professor

Linda A. Snyder, Ph.D. (UNC—G). Socio-psychological aspects of clothing, Historic costume.

Program Objectives

•To integrate basic coursework in the arts and humanities, the social sciences, physical science, and math with the study of textiles,clothing and business.

•To relate the study of textiles, clothing, and fashion merchandising to the needs of individuals and families.

•To prepare students for a broad range of job opportunities in the textile, apparel, and retail industries.

Area of Emphasis

All students in the program obtain a diverse background in textiles and clothing. A strong emphasis in fashion merchandising is available. Additional emphases in personnel dynamics apparel design, fashion journalism, gerontology, and the social psychology of clothing and business are available.

Special Opportunities

Electives include a fashion merchandising internship in which students can apply textile and clothing subject matter to an actual work situation in the retail, journalism, or apparel industry. A fashion merchandising study tour to New York enables students to observe the fashion industry and to view historic costume collections.

Career Prospects

Positions in retailing include buying, merchandising, managing, coordinating, and promoting fashion goods. Placement may be found with specialty stores, department stores, mass merchandisers, discount operations, small and large chain organizations and with regional and resident buying offices. In the textile and apparel industries, wholesale marketing and promotion positions are available. Fashion writing and illustration positions are available with newspaper and fashion magazine publishers. Graduates may pursue apparel design after additional study in art and design.

Suggested Curriculum

Ordinarily, the following courses are required: Art 105 or 106, Psych. 1, Soc. & A. 1 or 5, Econ. 54, C.S. 5, Acctg. 51, Engl. 105 or 112, and restricted business-related courses. Textiles, Clothing and Fashion Merchandising requirements include: TX&CL 27, 121, 124, 126, 224, 227, ID&H 31, HM&FE 261, plus 12 hours of textiles and clothing electives. Twelve credit hours of restricted electives may be chosen in the following areas: psychology or sociology and anthropology, art or theatre (apparel design), journalism (fashion), gerontology, and business. Departmental advisors may approve substitutions.

Division of Forestry

Jack E. Coster, Chairperson
Norman D. Jackson, Assistant Chairperson
James P. Armstrong, Wood Science Coordinator
Eugene C. Bammel, Recreation & Parks Coordinator

Degrees

Bachelor of Science
Bachelor of Science in Forestry
Bachelor of Science in Recreation

Programs of Study

If you are interested in natural resources and the out-of-doors, you may be interested in one of the four curricula offered by the Division of Forestry. Those include forest resources management, recreation and parks management, wildlife resources, and wood industries. If you wish to be admitted to our division but are unsure about your major, you can be admitted to the general forestry curriculum with a faculty member to advise you until a program major has been selected. If you have chosen a program major, you will be admitted directly to the major and be assigned a faculty adviser at your first registration.

Our division, which has excellent facilities, is located in Percival Hall on the Evansdale Campus in close proximity to the Evansdale Library and the Towers Residence Halls. Available physical space totals 40,412 square feet, of which 33,587 is lecture, seminar room, and teaching and research laboratories. The remaining portion is office space for faculty, graduate students and staff. In addition, 10,400 acres of forested tracts including the 7,000 acre University Forest located near the campus which we manage are used as extensive outdoor laboratories.

Transfer Credits for Professional Courses

If you are a transfer student entering the Division of Forestry from a one- or two-year technical school or from a four-year unaccredited forestry school, you must take an advanced standing examination to demonstrate proficiency in any required professional course offered by the Division of Forestry for which transfer credit is sought. This rule also applies to courses in dendrology and surveying. Advanced standing examinations are given after you have enrolled in the Division of Forestry. All other credits are accepted subject to the regulations of the Office of Admissions and Records regarding transfer of credits.

Bachelor of Science in Forestry
Forest Resources Management Curriculum

This curriculum is designed to prepare you for a career in management of forest land and associated resources. In forestry, we face growing demands for wood products, along with increasing public consciousness of the value of wildlands for recreation, wildlife habitat, watershed protection, aesthetics, and environmental protection. Our curriculum is designed to train you in a balanced approach to forest management. The major emphasis is on management and utilization of timber resources, but we also orient you to management of forests for recreation, wildlife, and water. We also stress the importance of forest climate, environmental protection, and aesthetic qualities in forest management.

Curriculum Structure

We require you to complete 138 credit hours of coursework. Required courses include biological, physical, and social sciences, English composition and communication, mathematics, forest science and management, and liberal studies. We require a

six week summer field practice; this period, along with laboratories in several of our courses, gives you ample opportunity to gain field experience in the University forests. Overall, we have designed the curriculum to give you the needed blend of scientific, technical, and managerial knowledge you will need to manage public or private forest resources. You may use elective hours to develop additional professional competence in specialized areas.

This curriculum is accredited by the Society of American Foresters.

Curriculum Requirements	**Hours**
English 1 and 2 *Composition and Rhetoric*	6
Chemistry 11 and 12 *Survey of Chemistry* (orequivalent)	8
Biology 1 and 3, and Plant Science 52	8
Mathematics 128 *Introduction to Calculus**	3
Forestry 10 *Forest Meteorology*	3
Agronomy 2 *Soil Science*	4
Forestry 5 *Dendrology*	3
Civil Engineering 5 *Land Surveying*	4
Economics 54 and 55 *Principles of Economics*	6
English 105, 108, or 208 *Business English, Advanced Composition, or Scientific and Technical Writing*	3
Statistics 101 *Elementary Statistical Inference*	3
Computer Science 5 *Introduction to Computer Applications*	4
Forestry 1, 220, and 226	6
Forest Management 12, 122, 151, 211, 230, 233, 234	24
Forest Management 200 and 201**	6
Forest Hydrology 244	3
Speech Pathology and Audiology 80 *Speech Improvement*	3
Recreation and Parks elective***	3
Wildlife Management 131	3
Wood Science 121 and 132	5
Additional LSP requirements, not elsewhere covered	18
Electives	12
Total	138

*Students may elect to take Math. 15.

**F. Man. 200 and 201 are summer field practice courses. See description of "Summer Field Studies," elsewhere in this section.

***Consult academic adviser for recommended courses.

Career Opportunities

Our graduates find a variety of career opportunities. Many are professional foresters with governmental agencies, such as the United States Forest Service and state forestry services, and many others are employed by private wood industries such as lumber and wood products companies and pulp and paper companies. Some of our graduates work in private forestry consulting or have established their own businesses. A significant number of our students go on to graduate school, studying a wide range of scientific and technical specializations to prepare them for research, teaching, or advanced managerial careers.

Bachelor of Science
Wildlife and Fisheries Resources Curriculum

The wildlife and fisheries management curriculum, consisting of 136 hours is designed to prepare you for professional positions as wildlife and fish biologists, wildlife managers, planners of wildlife/fisheries conservation programs, wildlife or fisheries communication specialists, and wildlife and fish toxicologists. The curriculum

provides a solid basic background in biology, ecology, and natural resource management. A careful selection of restricted and free electives enables you to specialize in related natural resource areas and to have the opportunity for widening employment in other environmental fields. Wildlife graduates from our program meet the certification requirements for wildlife biologists from the Wildlife Society.

The curriculum offers five options: wildlife science oriented toward research (for those considering graduate school; our most popular option); wildlife management directed toward land management; fisheries science with emphasis on fishery biology and management; toxicology; and planning. Other options can be tailored to your objectives. You will be able to consult with your advisor in the selection of courses from a group of restricted electives to develop your area of emphasis.

Curriculum Requirements	**Hours**
English 1 and 2 *Composition and Rhetoric*	6
Mathematics 3 and 4 *College Algebra, Trigonometry*	6
Biology 1, 2, 3, and 4 *Principles of Biology*	8
Forestry 5 *Dendrology*	3
Chemistry 11 and 12 *Survey of Chemistry*	8
Chemistry 131 *Organic Chemistry*	4
Mathematics 128 *Introduction to Calculus*	4
Economics introductory course	3
Computer Science 5	4
Soils introductory course	3
Oral communication	3
Statistics 101 or equivalent	3
Genetics 171 *Principles*	4
Animal Physiology 100	3
Plant (botany) course	3
Resource policy course	3
Forest Management 211 *Silviculture*	4
Wildlife Management 213, 214, 224, 228, 231*, 234*	18
LSP Electives **	18
Restrictive Electives	18
Free Electives	9
Total	136

*Students selecting the fisheries option will take Biol. 246 *Limnology* and Biol. 257 *Ichthyology* in place of Wildlife Management 233 and 234.

**Courses in each of Cluster A and B must involve at least three different disciplines. At least two courses must be taken in the same discipline. Three hours of Cluster A or B must focus on foreign or minority culture.

When you attend West Virginia University, you will have some special opportunities to enhance your education. We have a U.S. Fish and Wildlife Service Cooperative Research Unit housed within our program. This provides three additional faculty conducting extensive research programs all around the country. Undergraduates benefit from the unit in several ways: the unit provides a federal contact for employment opportunities; the unit research program may provide summer employment on fish and wildlife projects; and faculty in the unit also teach in our program.

All of our faculty are involved with graduate training. This active research program provides invaluable classroom experiences as well as summer employment opportunities for you.

Career opportunities in wildlife and fisheries are expanding. Even so, we encourage our students to consider going for advanced degrees when they finish here. Such qualified seniors find that assistantships are readily available due to the solid course background and training they received while here at West Virginia University.

As a graduate professional forester, you could expect to do field work such as estimating the volume and value of areas of timberland, planning and supervising timber harvesting operations, and doing forest protection work, including fire, insect, and disease control. Managerial work would include such things as planning timber crop rotations, evaluating the economics of alternative forest management plans, and planning for integrated use of forest land for recreation, timber, watershed, wildlife, and environmental protection. With experience and proven performance in these activities, professional foresters often advance to executive management positions in public forestry agencies or forest industry companies.

Bachelor of Science in Forestry
Wood Industries Curriculum

The wood industries curriculum is designed to prepare you for a career in the wood products industry. This industry is a vitally important and growing segment of the economy. It is widely varied in its size, location, products, and activities. We require that you complete 138 credit hours of coursework to receive your Bachelor of Science in Forestry degree. Our curriculum is anchored to a strong background in basic and wood sciences. It emphasizes what you will need to know to function effectively as a professional and as a member of society. The courses you will take will help you to understand wood as an industrial raw material and as a construction material.

Areas of Emphasis

There are three options within the wood industries curriculum that you may choose from: management, production, and wood science. The management option requires that you take credit hours in business administration courses and will prepare you for a career in marketing or management in the wood products industry. The production option requires a background in wood processing and industrial engineering courses. This option is best if you wish to work in production management, quality control, or process control in the wood products industry. The wood science option requires a core of basic science and engineering courses. This option is recommended if you wish to pursue a career in the technical aspects of wood industries, including research. It is also excellent preparation if you plan to continue your education through graduate school.

Curriculum Requirements	**Hours**
Biology 1, 3 *General Biology*	4
Chemistry 11, 12 *Survey of Chemistry*	8
English 1, 2 *Composition & Rhetoric*	6
Mathematics 3, 4 *College Algebra, Plane Trigonometry*	6
Forestry 1	1
Forestry 5	3
Civil Engineering 1 or 5 *Surveying*	2-4
Statistics 101 or Economics 125	3
Computer Science 1 or 5	4
Economics 54, 55 *Principles of Economics*	6
Mathematics 15 *Calculus*	4
Physics 1 *Introductory Physics*	4
Forest Management 12, 122, 211, 233 or 234	14-15
Wood Science 123, 132, 134, 141, 200, 201, 240, 260, 262	26
LSP	18
Restricted electives	25-28
Total	138

Requirements	Hours
Management:	
Accounting 51, 52 *Principles of Accounting*	6
Management 105 *Management Process*	3
Marketing 111 *Marketing*	3
Finance 111 *Business Finance*	3
Wood Science 234, 235	5
Production:	
Industrial Engineering 140, 277	4
Wood Science 230, 231, 232, 234, 251	14
Science:	
Chemistry 133, 135 *Organic Chemistry and Laboratory*	4
Mathematics 16 *Calculus*	4
Physics 2 *Introductory Physics*	4
Mechanical and Aerospace Engineering 41, 42 *Statistics and Mechanics of Materials*	6

Special Opportunities

West Virginia University is one of two colleges in the United States with programs that are recognized by the Architectural Woodwork Institute for preparing our graduates for careers in the architectural woodwork industry. These companies design and fabricate the wood components and trim in hotel lobbies, banks, and office buildings. This opportunity can open doors for you in finding jobs in this exciting industry.

Career Prospects

Job opportunities for our wood industries graduates are outstanding. More than 95 percent of our seniors who seek employment after graduation find jobs in the wood products industry. Salaries are generally competitive with other technical disciplines and opportunities for career advancement are excellent. Our graduates are employed in all areas of the wood products industry: sawmills, furniture and cabinet manufacturers, plywood and particleboard plants, logging and timber procurement companies, retail and wholesale building materials firms, research laboratories, universities, and government agencies. They have found jobs in all areas of the United States and in many foreign countries. Many of the leaders in the forest products industries are West Virginia graduates.

Summer Field Studies

The six hour *Forest Resources Management Summer Field Practice* (F. Man. 200 and 201) consists of two consecutive summer sessions, and is designed for students who have completed the junior year of the forest resources management curriculum. Students live in Morgantown in University or privately owned housing, and travel to the University Forest daily for field studies. The first session provides training in forest surveying, timber estimating, photo interpretation, forest management, and forest recreation. Occasional trips are made to wood-using industries and to other forests to study the management of northern hardwood and spruce types. The second session is a one-week trip to North Carolina, where silvicultural and management activities are observed in the southern pine region.

The instructional program in the four hour *Wood Industry Field Practice* (Wd. Sc. 200 and 201) consists of a three-week field course in surveying and mensuration followed by a one-week trip to Virginia and North Carolina to observe various commercial wood-using industries. These industries include: lumber, plywood, veneer, particle board, furniture, glue lamination, and preservation. *Recreation Internship* (Rc. & Pk. 202) is required of students who have completed the sophomore year of the recreation resources management curriculum. Eight weeks of full-time supervised professional

field work is required of students who have completed the junior year of the recreation curriculum. The summer experiences acquaint students with management of park and recreation enterprises.

Bachelor of Science in Recreation
Recreation and Parks Management Curriculum

The recreation and parks management curriculum is designed to prepare you for a career providing recreation opportunities in the public sector, with private or commercial agencies, or in a therapeutic setting. Whichever option you choose, we require 136 hours to complete the program. A large core of recreation classes insures employability beyond the limits of each option.

An information booklet and option advising sheets are available from the Recreation and Parks Management Office, Division of Forestry, 329 Percival Hall, P.O. Box 6125, West Virginia University, Morgantown, WV 26506-6125. These will help you prepare appropriate course schedules.

In the freshman year, you may enroll in Rc. & Pk. 43 *Leisure and Human Behavior* and Rc. & Pk. 44 *Introduction to Recreation and Park Services.* At the end of the junior year, you must complete an approved, full-time internship of not less than eight weeks with a recreation agency. Therapeutic recreation internships last at least ten weeks, and must be supervised by a certified recreation specialist. They may be undertaken at any time during the year.

Requirements	**Hours**
English 1 and 2 *Composition and Rhetoric*	6
Mathematics 3 (and one of Math. 4, C.S. 5, or Stat. 101, depending upon option chosen)	6
Psychology 1 *Introduction to Psychology*	3
Sociology 1 *Introduction to Sociology*	3
Economics 54 and 55	6
Natural Science (including LSP requirement)	12
Recreation and Parks courses:	
Rc. & Pk. 43, 44, 202, 203, 216, 233, 235, 241, 251, 263, 265	34
Restricted electives	54
Free electives	12
Additional LSP requirements as explained elsewhere in this catalog.	
Total	136

Options or Areas of Emphasis

The program of study provides for three areas of emphasis (options): administration and planning, therapeutic recreation, and wildlands recreation management. Each option is developed from a core of recreation classes which establishes a basic professional proficiency. Additional competencies may be developed through the careful selection of electives.

Administration and Planning. This option provides preparation for general entry into the parks and recreation career field. Course work enables you to qualify for positions of increasing operational, supervisory, planning, and managerial responsibility. Course work emphasizes the planning, organizing, and delivery of recreation and parks services in a variety of settings. This preparation is strengthened by the inclusion of classes in political science, economics, accounting, management, forestry, landscape architecture, and the behavioral sciences.

Therapeutic Recreation. This option prepares you to plan and provide comprehensive therapeutic recreation services. These services include: treatment, which uses activities to improve functional abilities; leisure education, which uses activities to acquire skills, knowledge and attitudes that facilitate an independent leisure life-style; and participation, which provides recreation activities for leisure enjoyment. These services are provided for persons who are mentally or physically disabled, substance

abusers, law offenders, the hospitalized, or the aging. In addition to recreation classes, you will complete course work in psychology, physical education, and the arts. Principal employers are rehabilitation centers, acute care hospitals, psychiatric hospitals, psychiatric hospitals, long-term-care facilities, senior citizens' centers, children's hospitals, and community recreation agencies.

Wildlands Recreation Management. This option prepares you for positions concerned with outdoor recreation in forested settings. In addition to recreation classes, you complete course work in natural resources (forestry, wildlife, environmental), behavioral sciences, political science, economics, and management. Although primary attention is placed on recreation in wildlife settings, there is sufficient flexibility to permit students to emphasize applied outdoor recreation management or interpretation of the historical and natural environments.

Accreditation

The recreation and parks management program is fully accreditated by the National Recreation and Park Association for three options: administration and planning, therapeutic recreation, and wildlands recreation management. Approximately 100 colleges and universities have earned NRPA approval.

Faculty

Professors

Jack E. Coster, Ph.D. (Tex. A&M U.). Chair. Forestry, Entomology.

Eugene C. Bammel, Ph.D. (Syracuse U.). Recreation and Parks. Leisure theory, Historical interpretation, Tourism.

Lei Lane Bammel, Ph.D. (U. Utah). Recreation and Parks. Leisure studies, Research designs.

Samuel M. Brock, Ph.D. (U. Minn.). Forest Management. Forest resource economics, Forest management, Economics of conservation.

Maurice G. Brooks, M.S. (WVU). *Emeritus.*

Kenneth L. Carvell, D. For. (Duke U.). *Emeritus.*

Franklin C. Cech, Ph.D. (Tex. A&M U.). *Emeritus.*

Allen W. Goodspeed, M.F. (Yale U.). *Emeritus.*

John R. Hamilton, Ph.D. (N.C. St. U.). *Emeritus.*

Ray R. Hicks, Jr., Ph.D. (SUNY). Forest Management. Forest ecology, Forest pest management.

Joseph M. Hutchison, Jr., M.S. (WVU). Recreation and Parks. Recreation and parks management, Administration, planning, policy.

Norman D. Jackson, M.W.T. (N.C. St. U.). Assistant Chair. Wood Science. Harvesting and primary manufacturing.

William E. Kidd, Jr., M.S.F. (VPI&SU). Extension Specialist. Forest management.

Edwin D. Michael, Ph.D. (Tex. A&M U.). Wildlife Management. Wildlife management, Wetland wildlife.

David E. Samuel, Ph.D. (WVU). Wildlife Management. Policy and administration, Wildlife attitudes, Hunter education.

Robert L. Smith, Ph.D. (Cornell U.). Wildlife Management. Habitat assessment, Ecology of disturbed ecosystems, Population ecology.

Stanislaw Jan Tajchman, Ph.D. (U. Munich). Forest Management. Forest meteorology.

Earl H. Tryon, Ph.D. (Yale U.). *Emeritus.*

David E. White, Ph.D. (SUNY). Forest Management. Forestry economics, Policy analysis.

Robert C. Whitmore, Ph.D. (B. Young U.). Wildlife Management. Avian ecology, Quantitative ecology.

Harry V. Wiant, Jr., Ph.D. (Yale U.). Forest Management. Mensuration, Silviculture.

David O. Yandle, Ph.D. (N.C. St. U.). Forest Management. Forest biometrics,Statistics.

Associate Professors

James P. Armstrong, Ph.D. (SUNY). Wood Science. Physical behavior of wood, Hardwood drying.
William N. Grafton, M.S.F. (WVU). Extension Specialist. Wildlife.
F. Joseph Margarf, Ph.D. (Tex. A&M U.). Adjunct. Fisheries science, Ecology.
David W. Patterson, Ph.D. (Tex. A&M U.). Wood Science. Plant layout, Operations research.
Sue A. Perry, Ph.D. (North Tex. St. U.). Adjunct. Aquatic ecology.
Henry C. Smith, M.S.F. (Purdue U.). Adjunct. Silviculture.
William L. Wylie, M.S. (WVU). Emeritus.

Assistant Professors

Beverly Hummel-Azzaro, Ph.D. (WVU). Chairperson. Family Resources. Therpeutic recreation.
Douglas J. Gardner, Ph.D. (Miss. St. U.). Wood Science. Wood chemistry, Adhesives and adhesion.
Curt C. Hassler, Ph.D. (VPI&SU). Leader, Appalachian Hardwood Center. Timber harvesting, Systems analysis.
Steven J. Hollenhorst, Ph.D. (Ohio St. U.). Recreation and Parks. Outdoor recreation.
William B. Perry, Ph.D. (VPI&SU). Wildlife Management. Fisheries management.
Anthony C. Tomkowski, M.S.F. (WVU). Forest Management. Fisheries, Forestry, Forest water quality.
Michael P. Wolcott, M.S. (U. Maine). Wood Science. Solid mechanics, Design of wood base composites.

Division of Plant and Soil Sciences

Barton S. Baker, Ph.D., Chairperson.

Nature of Program/Objectives/Goals

Plant and Soil Sciences majors have several options from which to choose: agronomy (crop science and soil science), horticulture, environmental protection, and basic science. Graduates from this curriculum are employed in commercial industries involved with the production and distribution of pesticides, fertilizers, seeds and plants, and nursery, floral and turf products. Positions as estate and farm managers, land reclamationists, city and county planning technicians, park and golf course superintendents, and environmental protectionists are also available to graduates. A variety of state and federal government positions are available as well. Graduates who wish to further their education may acquire the necessary backgrounds to enter professional or graduate programs in such fields as agricultural biochemistry, crop science, entomology, genetics, horticulture, microbiology, mycology, plant pathology, plant physiology, and soil science.

The curriculum requirements for the plant and soil science program include:

Curriculum Requirements	Hours
English Composition and Rhetoric	6
(or conformity with University English requirements)	
Arts and Humanities (Cluster A)	12
Social and Behavioral Sciences (Cluster B)	12
Natural Sciences (Cluster C included)	24
(Must elect a minimum of eight hours in biology; eight hours in chemistry; three hours in college algebra or equivalent.)	
Curriculum Requirements continued on next page.	
Courses in Agriculture	45
Elect a minimum of a three credit course, excluding *Assigned Topics*, fromeach of the following course prefixes: 1. Animal Science; 2. Plant Science; 3. Soil Science; and 4. Agricultural Economics. Elect additional courses to obtain a total of 45 hours in agriculture.	
Free and Restricted Electives	37
Total	136

The specific requirements for each of the program options are listed under the description of that option.

Agronomy

Agronomy is the application of sciences to the production of field crops and the management of soils. Agronomists are concerned with producing food and with protecting soil and water resources. The crop science option in agronomy emphasizes primarily the physiology, production and quality of forage crops. The soil science option in agronomy emphasizes the characteristics and management of soils for growing plants construction sites, wastewater treatment, and surface mine reclamation. Agronomists qualify for a wide variety of occupations, including farming, soil conservation, soil survey, agricultural sales, extension, research, plant breeding, and turfgrass management.

Required courses: Biol. 169, Eng. 208, Env. Micro. 141, Math. 4 or equivalent, Phys. 1, Stat. 101, three hours in Computer Science, three hours in Communication Studies or Speech Pathology and Audiology, one semester of Organic Chemistry including laboratory.

Additional requirements for crop science: Ento. 204, Gen. 171, P. Pth. 201, six hours in Econ. or Agr. Econ., 15 hours in Crop Science, six hours in Soil Science;

Additional requirements for soil science: Geol. 1 and 2, three hours in Engineering, six hours in Crop Science, 15 hours in Soil Science.

Basic Science

This option is especially designed for students who are interested in continuing their education beyond the undergraduate level. Students enrolled in this option develop a strong background in the basic sciences, which permits graduate studies in a number of fields.

Required courses: Ag. Bi. 210; Ag. Micro. 141; Biol. 169; Chem. 133, 134, 135, 136; Econ. 54; Math. 3, 4, 15, 16; Phys. 1, 2; Stat. 101.

Environmental Protection

This option prepares students for careers in areas which safeguard the quality of the environment. The curriculum includes broad interdisciplinary training in the environmental sciences. Areas of specialization include reclamation of disturbed lands, waste management, pest management, and protection of air, food, and water quality. Students work with their advisor to select courses (restricted electives) appropriate for the area of specialization. Recent graduates in this option are employed by municipal,

state, and federal governmental agencies, consulting firms specializing in land reclamation and water quality, and companies associated with the gas, oil, or coal industries.

Natural Science Requirements (30 hours): Chem. 15, 16, 131; Biol. 1,2,3,4; Math. 3; Stat. 101; Geol. 1, 2.

Required College Courses (24 hours): Agron. 2; Ento. 204; Env. M. 141, 201; Gen. 171; Pl. Sc. 52.

Restricted Electives (minimum of 26 hours selected from the following): F. Hyd. 244; P. Pth. 201; Agron. 21-, 212, 255; C.S. 1 or 5; Ento. 210, 212; Ag. Bi. 210; Eng. 208; Phys. 1,2; C.E. 147, 240, 251; Biol. 246; Chem 115, 212; Geog. 105, 205, 221; Pol. S. 238.

Horticulture

Horticulture is the science of production, processing, and marketing of fruit, vegetable, greenhouse and landscape crops. Students in the horticulture option study the physiology, culture, harvesting, quality control, slaes and utilzation of horticultural crops. Horticulture prepares students as orchard, vegetable farm or greenhouse managers, landscape contractors, golf course and park horticulturists, seed and supply company representatives, state and federal nursery inspectors and educators in schools and extension. Required courses: Ag.Econ. 50 or Econ. 54; Agron. 2; Biol. 1, 2, 3, 4, 169; Chem. 131 or 133 and 135; C.S. 1 or 5; Ento. 204; Hort. 107, 204, and six hours additional Hort.; P. Pth. 201.

Faculty

Professors

Robert E. Anderson, Ph.D. (U. Wisc.). Extension. Agricultural Microbiology. Food microbiology, Environmental education.

Barton S. Baker, Ph.D. (WVU). Chairperson, Plant and Soil Sciences. Agronomy. Forage crops.

John A. Balasko, Ph.D. (U. Wisc.) Agronomy. Forage crops.

John F. Baniecki, Ph.D. (U. Ariz.). Extension. Plant Pathology. Plant disease identification and control.

H. L. Barnett, Ph.D. (Mich. St. U.). *Emeritus.*

Bradford C. Bearce, Ph.D. (U. Calif.). Horticulture. Florist and nursery crops.

Joseph G. Barratt, Ph.D. (U. N.H.). *Emeritus.*

Gary K. Bissonnette, Ph.D. (Mont. St. U.). Environmental Microbiology. Aquatic microbiology.

William B. Bryan, Ph.D. (Iowa St. U.). Agronomy. Pastures.

Linda Butler, Ph.D. (U. Ga.). Entomology. Forest entomology, Pest management, Lepidoptera.

Edward S. Elliott, Ph.D. (WVU). *Emeritus.*

Mannon E. Gallegly, Jr., Ph.D. (U. Wisc.). *Emeritus.*

Frank W. Glover, Jr., B.S. (WVU). Adjunct. Agronomy.

N. Carl Hardin, M.S. (WVU). *Emeritus.*

Henry W. Hogmire, Ph.D. (Mich. St. U.).Entomology. Tree fruit entomology, Integrated pest management.

Dale F. Hindal, Ph.D. (Iowa St. U.). *Emeritus.*

L. Morris Ingle, Ph.D. (Purdue U.). Horticulture. Post-harvest physiology of tree fruits.

Walter J. Kaczmarczyk, Ph.D. (Hahnemann Med. C.). Genetics. Biochemical genetics.

Robert F. Keefer, Ph.D. (Ohio St. U.). Agronomy. Soil fertility, Organic matter, Soil conservation.

William L. MacDonald, Ph.D. (Iowa St. U.). Plant Pathology. Forest and shade tree diseases.

Stephen S. Miller, Ph.D. (WVU). Adjunct. Horticulture.

Joginder Nath, Ph.D. (U. Wisc.). Genetics. Cytogenetics, Evolution, Mutagenesis.
Tong-Man Ong, Ph.D. (Ill. St. U.). Adjunct. Genetics.
David O. Quinn, M.S. (WVU). *Emeritus.*
Oscar E. Schubert, Ph.D. (U. Ill.). *Emeritus.*
John C. Sencindiver, Ph.D. (WVU). Agronomy. Soil science, Soil genesis and classification, Acid mine drainage/mine land reclamation.
Rabindar N. Singh, Ph.D. (VPI&SU). Agronomy. Soil chemistry and mineralogy.
Richard M. Smith, Ph.D. (Ohio St. U.). *Emeritus.*
Charles B. Sperow, Jr., M.S. (WVU). Extension. Agronomy. Crops agronomy.
R. Philip True, Ph.D. (U. Penn). *Emeritus.*
Valentin Ulrich, Ph.D. (Rutgers U.). Genetics. Biochemical genetics, Plant breeding.
Collins Veatch, Ph.D. (U. Ill.). *Emeritus.*
Harold A. Wilson, Ph.D. (Iowa St. C.). *Emeritus.*
Robert J. Young, Ph.D. (Ore. St. U.). Plant Pathology. Vegetable diseases.
Richard K. Zimmerman, Ph.D. (WVU). Extension. Plant Sciences. Plant sciences and conservation.

Associate Professors
James W. Amrine, Jr., Ph.D. (Iowa St. U.). Entomology. Medical entomology, Apiculture, Biological control.
Tara Baugher, Ph.D. (WVU). Extension. Horticulture. Tree fruits.
Alan R. Biggs, Ph.D. (Penn St. U.). Plant Pathology. Tree fruits.
James L. Brooks, Ph.D. (U. Calif.). Agricultural Biochemistry. Enzymes, Plant biochemistry.
Everett M. Jencks, Ph.D. (Rutgers U.). Agronomy. Soil chemistry.
Joseph B. Morton, Ph.D. (Mont. St. U.). Plant Pathology. Mycorrhizal interactions, Field crop diseases.
Alan J. Sexstone, Ph.D. (Mich. St.). Environmental Microbiology, Soil microbiology.
Joseph E. Weaver, M.S. (WVU). Entomology. Bionomics, Pest management.
Roger S. Young, Ph.D. (Mich. St. U.). *Emeritus.*

Assistant Professors
James B. Kotcon, Ph.D. (U. Wisc.). Plant Pathology. Nematology, Soil-borne diseases.
Juanita Popenoe, Ph.D. (Wash. St. U.). Horticulture. Small fruits.
Jeffrey Skousen, Ph.D. (Tex. A&M U.). Reclamation. Agronomy. Soil science, Land reclamation.
Tom Staley, Ph.D. (Ore. St. U.). Adjunct. Agricultural Microbiology.

Division of Resource Management

Virgil J. Norton, Ph.D., Chairperson.

Programs

The Division of Resource Management offers curricula in agricultural education, landscape architecture, and resource management. The curriculum in resource management allows emphasis in general agricultural economics, agribusiness management, farm management, rural development and resource economics. Students are prepared to pursue graduate studies or work in agriculture, business, industry, government, finance, and related areas. The curriculum in agricultural education prepares students to teach agriculture in secondary schools, enter the extension service, or accept professional employment in government, industry, or entrepreneurship. An agricultural education major can also elect to specialize in

agricultural mechanization, with employment opportunities available in related activities after graduation. The landscape architecture curriculum prepares students for professional careers in government and private industry in that field.

Bachelor of Science
Resource Management Curriculum

This bachelor of science curriculum, with its flexible design, provides the student with the opportunity to acquire the necessary background in mathematics, statistics, computer science, and economic theory and modern concepts of science in preparation for professional or graduate study. Selection of individual courses is the responsibility of the student in consultation with the adviser.

Curriculum Requirements	**Hours**
English Composition and Rhetoric	6
(or conformity with University English requirements)	
Arts and Humanities (Cluster A)	12
Social and Behavioral Sciences (Cluster B)	20
(The student shall elect a minimum of one course in each: history, political science, psychology, sociology and anthropology.)	
Natural Sciences (Cluster C)	26
(The student shall elect two courses in calculus and two in statistics.)	
Computer Science	6
Courses in College of Agriculture	24
Electives	34
Total	128

Bachelor of Science in Agriculture
Resource Management Curriculum

This curriculum includes five areas of concentration which provide specialized training for a wide variety of careers. The areas of concentration are: general agricultural economics, agribusiness management, farm management, rural development and resource economics. The general agricultural economics area of concentration provides a basic background for a variety of agriculturally-related careers.

Agribusiness and farm management areas provide specialized training for careers in agribusiness, credit, government and farming. Rural development and resource economics areas of concentration provide training for careers in community development, rural planning and management of natural resources. Employment opportunities exist with agribusiness firms, extension, local, state, national and international agencies. Additional opportunities are available through graduate degree programs.

Students selecting this curriculum should develop basic competencies in quantitative methods and communication skills such as: accounting, computer science, statistics, mathematics, and oral and written communications. Each student should complete at least one course in each of these areas as part of the WVU Liberal Studies Program or as part of the electives.

Curriculum Requirements	**Hours**
English Composition and Rhetoric	6
(or conformity with University English requirements)	
Liberal Studies	
Cluster A	12
Cluster B	12
Cluster C	12
(Must elect a minimum of four credit hours in biology and four credit hours in chemistry.)	

Required Courses 21-22
Agricultural Economics 50 and 240;
Agricultural Economics 10 or Accounting 51;
Math 14 or equivalent;
Computer Science 5; and
Statistics 101 or Economics 125.
Foundation Requirements in Agriculture 12-16
Elect a minimum of three credit hours, excluding *Assigned Topics*, in each of the following: 1. Animal Science, 2. Plant Science, 3. Soil Science, and 4. Agricultural Mechanics.
Concentration Requirements 15
Approved Electives (approved un consultation with adviser) 14-18
Free Electives 23-32
Total (must include at least 45 credit hours in agriculture) 136

Areas of Concentration and Suggested Courses
General Agricultural Economics: Ag. Ec. 104, 200 (or 211), 231, 261, and 271.
Agribusiness: Ag. Ec. 104, 190, 220, 231, 261, and 271 (or 211).
Farm Management: Ag. Ec. 104, 190, 206, 231, 261, 271 (or 200), Forest Management 230.
Rural Development: Ag. Ec. 104, 190, 200, 211, 220, 261, and 271.
Resource Economics: Ag. Ec. 200, 211, 261, and 271.
In addition, at least 12 hours of credit should be selected from the following: Econ. 255, 257. MER 97, 98, 101, 260. Forestry Management 230 and Pol. Sci. 236, 238.

Bachelor of Science in Agriculture
Agricultural Education Curriculum
The agricultural education curriculum is designed to prepare students for entry into agricultural teaching, extension positions, or other professional employment in government, industry, or entrepreneurship. The curriculum provides flexibility to design programs emphasizing teacher education, extension education or agricultural mechanization.

Curriculum Requirements	**Hours**
English Composition and Rhetoric (or conformity with University English requirements)	6
Fine Arts and Humanities (Cluster A)	12
Social and Behavioral Sciences (Cluster B)	12
Natural Sciences and Mathematics (Cluster C) (Must elect a minimum of four hours in biology; four hours in chemistry; three hours in college algebra or equivalent.)	12
Courses in the College of Agriculture and Forestry Must include a minimum of a three credit course, excluding *Assigned Topics*, in each of the following: Animal Science; Plant Science; Soil Science; Agricultural Economics; and Forest Management.	45
Restricted Electives (To be selected from statistics, computer science, mathematics, physics, physical science, biology or chemistry.)	6
Electives	*43
Total	136

*Electives include the professional education courses for majors pursuing teacher certification as well as suggested courses in extension education and agricultural mechanization for students pursuing those options.

Agriculture Teacher Education

An effective agriculture teacher can assist in the economic and social development of a community. High school and adult class and group instruction, strengthened by supervised occupational experience programs, are the methods whereby the agriculture teacher helps students become involved and established in production agriculture and off-farm occupations which require agricultural knowledge and skills.

Students completing this program will meet requirements for certification by the West Virginia Department of Education. The program provides graduates with the opportunity to become qualified to teach in the broad field of agriculture as well as to become especially prepared to teach in agricultural production and management, animal processing, agricultural mechanics, conservation, or ornamental horticulture. To be eligible for student teaching and subsequent certification to teach, the student must possess a 2.5 grade-point average, pass competency tests in reading, writing, mathematics, listening, speaking, computer literacy and agriculture, and complete the required professional education courses.

Students preparing to teach should refer to the section of this catalog entitled: "Professional Education-Middle and Adolescent" in the College of Human Resources and Education.

Extension Education

Persons who work in the Cooperative Extension Service are involved in out-of-school education for youth and adults. Extension personnel conduct educational programs and plan community development projects designed to enhance the quality of life.

Students interested in employment as an extension or a 4-H agent may acquire needed competencies by pursuing course work in agricultural education, educational psychology, adult education, community development, communications, and technology education.

Suggested courses:

Ag. Ed. 162 *Group Organization and Leadership* ,
Ag. Ed. 260 *Principles of Cooperative Extension* ,
Ag. Ed. 261 *Methods and Materials in Extension Education* ,
Ag. Ed. 263 *Teaching Young, Adult Farmer, and Off-Farm Agricultural Occupational Classses*

Agricultural Mechanization

This four-year program offers broad training in agricultural sciences as well as specialized instruction in areas of agricultural power and machinery, structures, irrigation and water management, electrification and lighting, and shop theory and practices. Students find employment opportunities in agricultural equipment sales and service, agricultural processing, as utility company representatives, with Federal agencies such as the Soil Conservation Service, and in other fields in which knowledge of mechanization technology applications is important.

Suggested courses:

Agr. M. 120 *Shop Theory and Methods*
Agr. M. 230 *Farm Structures*,
Agr. M. 240 *Agricultural Engines*
Agr. M. 260 *Advanced Farm Machinery*
Agr. M. 270 *Electricity and Lighting*
C.E. 5 *Land Surveying*

Bachelor of Science in Landscape Architecture
Landscape Architecture Curriculum

Landscape architecture is the art of design, planning and arranging natural and man-made elements on the land. It applies cultural and scientific knowledge with concern for the conservation and stewardship of natural and aesthetic amenities to create an environment that serves a useful and enjoyable purpose. This involves consideration of the quality of life in urban and natural settings, as well as the interaction of human activity with nature. The landscape architecture program at WVU strives to equip students with techniques and skills through problem-solving in design theory, site construction, land use planning, and planting design. It emphasizes a philosophy of responsibility and commitment to ethical standards regarding the natural environment, personal relationships, and professional practice.

The faculty represents a multidisciplinary team, with practical experiences in creative and scientific research, design, consultation, and public service. This diversity is the nucleus of the program, allowing for a strong undergraduate curriculum supplemented by related courses in the arts, sciences, engineering, and planning, reflecting the needs of the Appalachia region and employment opportunities.

Graduates of the program can assume traditional landscape architectural roles, e.g., positions with design consulting firms, governmental planning departments, construction firms, transportation planning agencies, etc. In addition, WVU graduates are prepared for design and planning positions meeting the needs common to West Virginia and other rural areas.

The landscape architecture program is fully accredited by the Landscape Architecture Accreditation Board of the American Society of Landscape Architects.

Curriculum Requirements	**Hours**
English Composition and Rhetoric	6
(or conformity with University English requirements)	
Arts and Humanities (Cluster A)	12
Social and Behavioral Sciences (Cluster B)	12
Natural Sciences (Cluster C)	12
C.E. 5	4
Courses in Landscape Architecture*	60
Electives	19
(including one math course to satisfy LSP requirements and six credit hours of studio art.)	
Total	136

*In addition each student will be required to work for at least one summer in an approved landscape architecture office, or equivalent.

To be eligible to advance in proper sequence in landscape architecture, a student must attain a C grade or better for each of the following courses: L. Arc. 20, 21, 50, 51, 131, 132, 140, 141, 150, 151, 250, and 251.

Of the 60 hours required for a Bachelor of Science in landscape architecture, the following courses, or their equivalent, are required: L. Arc. 20, 21, 31, 41, 50, 51, 112, 131, 132, 140, 141, 150, 151, 250, 251, and 284.

A portfolio review by the faculty will be required for all students at the end of the second year of the curriculum. Projects will be submitted by the student for formal review by the entire landscape architecture faculty. If the work is unsatisfactory, the student will not be allowed to proceed to the next level of course work until his/her work meets satisfactory standards.

Faculty
Agricultural Economics
Professors
Alfred L. Barr, Ph.D. (Okla. St. U). Associate Director, Agricultural and Forestry Experiment Station.
Dale K. Colyer, Ph.D. (U. Wisc.). Production economics, Rural development.
Robert L. Jack, Ph.D. (Penn St. U.). Marketing, Agribusiness.
Kenneth D. McIntosh, Ph.D. (U. Wisc). Associate Dean for Academic Affairs, College of Agriculture and Forestry.
Virgil J. Norton, Ph.D. (Ore. St. U). Chairperson, Resource Management. Resource economics.
Dennis K. Smith, Ph.D. (Penn St. U.). Rural development.

Associate Professors
Jerald J. Fletcher, Ph.D. (U. Cal.). Resource economics.
Tesfa Gebremedhin, Ph.D. (Okla. St. U.). Farm management, Agribusiness.
Tim T. Phipps, Ph.D. (U. Cal.). Resource economics, Agricultural Policy.

Assistant Professors
Laura A. Blanciforti, Ph.D. (U. Cal.). Marketing, Econometrics.
Alan R. Collins, Ph.D. (Ore. St. U.). Resource economics.
Gerard E. D'Souza, Ph.D. (Miss. St. U.). Farm management, Production economics, Finance.
Brenda Walker, J.D. (WVU). Visiting. Agricultural law.

Agricultural Education
Professors
Layle D. Lawrence, Ph.D. (LSU). Social science research, Curriculum development, Teaching methods.
Robert H. Maxwell, Ph.D. (Iowa St. U). Dean and Director, College of Agriculture and Forestry.

Associate Professor
Stacy A. Gartin, Ph.D. (Ohio St. U.). Communications, Program planning, Leadership development.
Edna L. McBreen, Ph.D. (Cornell U.). Director of WVU International Programs.

Assistant Professor
Kerry S. Odell, Ph.D. (Ohio St. U.). Research methodology, Microcomputer applications, Teaching methods.

Agricultural Mechanics
Professor
Robert G. Diener, Ph.D. (Mich. St. U.). Electricity, Agricultural Mechanics research.

Associate Professor
Kendall Elliott, M.S. Ag.E.(WVU). Engines, Hydraulics, Agricultural mechanization research.

Landscape Architecture
Professors
Alon Kvashny, Ed.D. (WVU). Site design, Landscape construction.
George W. Longenecker, M.F.A.(U. Ill.). Plant identification, Pl;anting design.

Associate Professors
Donald R. Armstrong, M.L.A. (Iowa St.). Site design, Design implementation.
Alexander G. Karther, M.F.A. (U. Okla.). Design communication, Design Methodology.
Steven B. McBride, M.L.A. (U. Mass.) Landscape construction, Site design.
Charles B. Yuill, M.L.A. (U.Mass.). Computer applications, Site analysis.

State Extension Specialists
Professors
Clifford W. Collier, Jr., M.L.A.(U. Ga.). Landscape architecture.
Delmar R. Yoder, Ph.D. (U.Wisc.). Resource development.

Emeriti
Professors
P. Vernon Armbrester, M.S. (WVU).
Russell C. Butler, Ph.D. (Cornell U.).
James H. Clarke, Ph.D. (U. Minn.).
Homer C. Evans, Ph.D. (U. Minn.).
Warren G. Kelly, Ed.D. (U. Mo.).
Marion L. Kimmons, Ph.D. (U. Mo.).
Beryl B. Maurer, Ph.D. (Penn St. U.).
O. Claude McGhee, Ph.D. (Penn.St. U.).
Ernest J. Nesius, Ph.D. (Iowa St. U.).
Paul E. Nesselroad, Ph.D. (Penn. St. U.).
Leonard M. Sizer, Ph.D. (WVU).
Ronald L. Stump, M.S. (WVU).
Mary E. Templeton, M.S. (WVU).
George E. Toben, M.S. (U.Ill.).

Associate Professors
Gerald V. Eagan, Ph.D. (U. Tenn.).
Wesley Lynch, M.S. (Mich. St.U.).

College of Arts and Sciences

Gerald E. Lang, Ph.D. (Rutgers U.), Dean of the College; Professor of Biology.
Frank J. Calzonetti, Ph.D. (U. Okla.), Associate Dean, Research and Graduate Studies; Associate Professor of Geography.
Shirley M. Dowdy, Ph.D. (U. Notre Dame), Associate Dean, Academic Affairs; Associate Professor of Statistics.
John F. Schnabel, Ph.D. (U. Notre Dame), Associate Dean, Development; Associate Professor of Sociology.
Nicholas G. Evans, Ed.D. (WVU), Assistant Dean, Undergraduate Education; Assistant Professor of English.

Majors in Arts and Sciences

Bachelor of Arts:

Biology	Board of Regents B.A.	Chemistry
Communication Studies	Economics	English
Foreign Languages	Geography	Geology
History	Interdepartmental Studies	Mathematics
Philosophy	Physics	Political Science
Psychology	Sociology and Anthropology	

Bachelor of Science:

Chemistry	Computer Science	Geology
Physics	Statistics	

The interdepartmental studies major involves concentrated study in more than one department of the University. These curricula include the individualized major, specially designated area major, and the liberal arts major. The specially designated area programs are:

Appalachian Studies	Art History
Comparative Literature	Dance and Liberal Studies
International Studies	Medieval and Renaissance Studies
Music	Religious Studies
Slavic Studies	

The alphabetical listing of programs contains additional information about degree programs and interdepartmental major programs. The coordinated dual degrees in business and foreign languages provide coordinated advising, registration, and possible internship opportunities for students seeking a bachelor of science in business administration and a bachelor of arts with a major in foreign languages. See Section 6 for details.

History

Starting with the initial charter of West Virginia University by the Legislature in 1867, the liberal arts and the sciences were an important and central element of the University. The College of Arts and Sciences was formally created in 1895, and eleven students received degrees from the College in 1896. In the 1911-12 academic year, the West Virginia Chapter of Phi Beta Kappa was established within the College of Arts and Sciences.

Today, the College of Arts and Sciences awards degrees to over 1,000 students every year. It remains the heart of West Virginia University, providing students with a liberal education in the areas of literature and the humanities, mathematics and natural sciences, and social and behavioral sciences. In addition to teaching, the College's 300 faculty members are actively engaged in research and scholarship, publishing approximately 300 articles and 25 books each year.

Mission

The primary mission of the College of Arts and Sciences is to promote the full development of the student as an individual and as a member of society. Students earning degrees in Arts and Sciences fulfill certain broad basic-education requirements and study at least one subject in some depth. The degree requirements are intended to carry forward what is usually termed "a general education," thus providing a foundation for continued growth and development after graduation.

Clearly, one purpose of a college education is to help students acquire knowledge and skills both for self-fulfillment and in preparation for the roles they will subsequently play in society. A less obvious but equally important purpose is to impart certain attitudes to students. In the interest of fulfilling both purposes, the College of Arts and Sciences strives to help students acquire the specific attributes listed below.

Knowledge

- A knowledge of the main principles, facts, concepts, and theories in a major area of concentration.
- A knowledge of Western and non-Western civilizations: their distinctive characters (belief systems, languages, intellectual and artistic contributions), and their origins, development, and present states.
- A knowledge and appreciation of the environment in which one operates (physical, biotic, social, technological, aesthetic), including knowledge of change processes (evolutionary, technological, social, intellectual) and knowledge of past adaptations as a basis for predicting the consequences of contemporary actions and changes.
- A knowledge and appreciation of the arts, of their humanizing and energizing effects, and of one's connection with the arts through one's impulses toward creativity.
- A familiarity with the various technical languages (statistics, linguistics, etc.) that are increasingly necessary to understand the major approaches in the sciences and humanities.

Skills

- Skills in the sophisticated techniques of a major area of concentration.
- Skills in communication using a variety of channels including writing, speaking, reading, listening, and viewing.
- Skills in analyzing and solving problems by recognizing ambiguities, using proper logic, marshalling pertinent facts and arguments, and using mathematicial techniques where appropriate.
- Skills in the use of the imaginative and synthetic processes of the mind, including innovative thinking and recognition of the connections among a variety of intellectual frameworks and matrices.
- Skills involved in decision-making, including the ability to recognize alternatives, project consequences, and assume the responsibility for making decisions.

Attitudes

- An attitude of dispassionate self-appraisal, based upon an understanding of one's own nature and characterized by an awareness of one's own strengths and weaknesses.
- An attitude of open-mindedness, permitting one to see beyond the limits of one's own occupation, economic status, language, and culture, and including a respect for opinions different from one's own.
- A willingness to recognize and respect ethical obligations and the rights of others.
- A commitment to truth-seeking, characterized by objectivity, utilization of evidence, intellectual curiosity, and the search for wisdom.

Admission to Arts and Sciences Degree Programs

High school students and transfer students are admitted to the College's pre-major programs on the basis of grade-point average and test scores. After completing a specific number of credit hours, students seek admission to a degree program within the college.

Minimal College of Arts and Sciences requirements for regular admission into many degree programs are completion of 58 hours of course credit, a 2.0 overall average, and a 2.0 average in courses already completed in the discipline of the degree program to which the student is applying. Specific degree programs or majors may have additional requirements.

Students may be admitted to degree programs in the College of Arts and Sciences in two distinct categories:

Regular Admission. Student has met all degree program requirements.

Provisional Admission. Student has completed 58 hours but has not yet met all College of Arts and Sciences and/or degree program requirements for entrance into the specific program. The department that accepts a student provisionally must state the terms of acceptance, including deficiencies, in writing. Failure by the student to remove deficiencies by the stipulated date will result in suspension from the degree program.

If a student has not been admitted to a degree program by the time of completion of 70 hours of course work, he/she will not be permitted to re-enroll in the College of Arts and Sciences.

Students planning to qualify for teacher certification as well as for an A&S degree should check with their advisers and the College of Human Resources and Education to determine the requirements for such certification.

Regulations Affecting Degrees

Bachelor of Arts Degree : The degree of Bachelor of Arts in the College of Arts and Sciences is conferred upon a student who complies with the general regulations of WVU concerning degrees and satisfies all entrance, college, and departmental requirements.

Bachelor of Science Degree : The degree of Bachelor of Science is conferred upon a student who complies with the general regulations of WVU concerning degrees, satisfies all entrance and college requirements, and completes the requirements for the Bachelor of Science degree in Chemistry, Computer Science, Geology, Physics, or Statistics.

Requirements for Degrees

In order to qualify for graduation, students must fulfill the University requirements stated in this catalog and the degree program requirements of the College of Arts and Sciences.

Credit Limitations

The following do not count toward the hours required for graduation:

A. Mathematics 2. (Course no longer offered.)

B. Courses in which the grade received is other than A, B, C, D, P, or S. Credit by examination, however, is counted toward hours required for graduation unless it was granted for courses otherwise excluded in this list.

C. Any course passed more than once, unless a course is designated as repeatable in the catalog.

D. More than 42 hours in one departmental subject for a Bachelor of Arts degree. (In the case of English language and literature, the 42-hour maximum excludes credits in English 1 and 2.) As much as 60 hours may be presented from a department that offers more than one subject (e.g., Foreign Languages).

E. More than eight hours of first- and second-year Military Science (ROTC) or Air Force Aerospace Studies (ROTC) courses.

F. More than six hours of third- and fourth-year Military Science (ROTC) or Air Force Aerospace Studies (ROTC) courses.

G. More than 72 hours of transfer credit from accredited junior or community colleges.

H. More than 18 semester hours of credit for which only a grade of P is recorded. (See Pass-Fail Grading.)

I. Any course in which the final grade is F. The student must take the course again in residence at WVU to receive credit for it.

Minimum and Maximum Load

A minimum of 12 hours in a semester is required for full-time status in the College of Arts and Sciences. No student enrolled in the College of Arts and Sciences may enroll for more than 19 hours in a semester without permission from the Academic Standards Committee.

Credit by Examination

Credit by examination provides students the opportunity to receive credit in courses by demonstrating that they have acquired sufficient knowledge of a subject without formal enrollment in a course or study in the classroom. This opportunity is offered only to students enrolled full or part-time at the University. The initiation of a credit-by-examination request does not entitle a student to special in-class instruction or tutoring by an instructor.

Any student may petition to receive credit by examination for any course listed by a department in the College of Arts and Sciences as one for which credit by examination is appropriately awarded. Applications, course lists, and examination schedules are available each semester.

A student may apply to challenge a course for credit by examination if: (a) the student is at the time of examination registered in the University; (b) the student's official record does not show credit for the course (i.e., any grade of S, P, A, B, C, D, or I); (c) the student is not officially enrolled in the course at the time of examination (a student who withdraws from a course after the end of the official registration period is officially enrolled in that course until the end of the semester, and not eligible to take the course by examination during that semester); and (d) a grade of F has not been recorded on the student's record for the course within two calendar years of the date of the examination. A student may challenge the same course by examination only two times.

Credit only (not a grade) will be awarded for the successful completion of the examination with a grade of C or higher. Because a comprehensive examination is used to establish credit, it is the policy of the college that a student should demonstrate at least an average (C) knowledge of course content to receive any credit. The criteria for earning a C are made known in advance to students who request the information from the department offering the course examination.

A nonrefundable fee is charged for credit by examination and must be paid within the prescribed period prior to each examination period.

College of Arts and Sciences Requirements

A. ***Foreign Language:*** Two years of study in one language. The student may satisfy this requirement by taking courses 1, 2, 3, and 4, or other approved courses, in one language. Students who present two or more units of high school credit in a foreign language may satisfy this requirement by taking courses 3 and 4, or other approved courses, in that language. Such students may elect to take courses 1 and/or 2 as additional preparation for courses 3 and 4. Languages that are currently available for fulfillment of this requirement include Arabic, Chinese, French, German, Italian,

Japanese, Latin, Portuguese, Russian, and Spanish. Languages such as Hausa, Hebrew, Polish, and Swahili, while occasionally offered, are seldon available beyond the elementary (first- and second-semester) level. Courses used to fulfill this requirement are in addition to those used to fulfill the University Liberal Studies Program Cluster A requirement.

B. ***Fine Arts:*** Each student must satisfactorily complete a minimum of three semester hours focused on the fine arts—art, literature, music, theatre, etc. Courses used to fulfill this requirement are in addition to those used to fulfill the Cluster A requirement. Courses satisfying this requirement are the following: Art 30; Classics 102; Communication Studies 187; English 21, 22, 24, 25, 35, 36, 80, 85, 125, 130, 131, 132, 133, 135, 143, 145, 150, 170, 171, 172, 175; Foreign Literature in Translation 13, 14, 15, 16, 17, 18, 111, 112, 121, 122, 131, 132, 141, 142, 151, 152, 155, 161, 162, 166, 181, 182, 188, 189; Humanities 1, 2, 5, 10, 11; Music 30, 130, 135, 137, 138; Philosophy 15; Religious Studies 142; Sociology and Anthropology 157; Theatre 30, 74, 220, 221, 295, 296, 297, 298.

C. ***International Studies:*** Each student must satisfactorily complete three semester hours of study of foreign countries or cultures, other than those of modern Western Europe or Canada, and/or their roles and interactions within the contemporary international system. This requirement may be used simultaneously to satisfy LSP requirements, but no course used to satisfy the foreign language requirement may be used to fulfill this requirement. Courses satisfying this requirement are the following: Communication Studies 135; English 85; Foreign Literature in Translation 16, 17, 152, 166, 171, 189; Geography 2, 143, 144, 210; History 4, 5, 6, 118, 142, 209, 225, 226, 228, 230; Humanities 5; Philosophy 113, 122; Political Science 3, 160, 250, 251, 254, 255, 256, 258, 266, 267, 269; Religious Studies 130, 131, 132; Sociology and Anthropology 5, 51, 155, 156, 222; Technology Education 245.

D. ***Electives:*** As approved by the adviser, to complete the minimum number of hours required for graduation.

E. ***Grade-Point Average:*** A cumulative grade average of 2.0 is required for graduation.

Degree Program Requirements

A. ***Major Subject:*** Requirements are listed separately in the catalog by department or degree program. To establish a major sequence and to qualify for graduation, the student must have spent at least two semesters and have accumulated a minimum of 30 semester hours as a student in a degree program.

B. ***Transfer Credit:*** Except with the approval of the department chair or degree program coordinator, no upper-division course in the major taken at another institution will be counted toward meeting the requirements of the degree program.

C. ***Grade-Point Average:*** All departments and degree programs in the College require at least a 2.0 (C) cumulative grade-point average for admission; some departments or programs may require a higher cumulative grade-point average. (See specific departments for admission requirements.)

D. ***Credit Hours:*** A total of 128 hours is required for the Bachelor of Arts degree. The Bachelor of Science degree in Computer Science, Geology, and Statistics requires 134 hours; in Chemistry and Physics, 136 hours.

Academic Minors

Several departments in the College of Arts and Sciences offer formal academic minors for students in Arts and Sciences degree programs. If a student successfully completes the requirements for a formal minor, this will be recorded on the student's official record and will appear on transcripts.

Requirements for academic minors are set by the department offering the minor. A formal minor must include at least 15 hours of course work with a minimum of nine hours at the upper division level (course number of 100 or above). Specific courses

may be required as well as a minimum grade or grade-point average for courses in the minor. Courses in the minor may not be taken pass/fail. The minor field may not be the same as the student's major field.

Only students in Arts and Sciences degree programs may take these academic minors. A student should declare his/her intention to complete a minor when formally requesting admission to a major program. Check sheets with the requirements of minors are available at the College of Arts and Sciences Undergraduate Advising and Student Records Office and from the student's adviser. It is the responsibility of the student to obtain information about the minor and to complete the required courses. At the time of application for graduation, the student must indicate that he/she wishes to be certified for the minor.

Application for Graduation and Diploma

All candidates for degrees in the College of Arts and Sciences must fill out an application for graduation and diploma in 206 Student Services Center. Candidates should make such application during the second semester of their junior year in order to have their records evaluated as to College of Arts and Sciences and University requirements. Application must be made during the first month of the semester or session in which the candidate expects to be graduated. If a student does not, for some reason, graduate on the date for which the student applied initially, the student must re-apply for a later date. No candidate can be graduated without application.

Appalachian Studies

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Ronald L. Lewis, Coordinator

Nature of Program

The interdepartmental major in Appalachian studies is designed to develop students' understanding of a growing body of knowledge about the problems and culture of the Appalachian region. WVU is uniquely equipped to provide a program of outstanding quality since the WVU Library has a large collection of Appalachian materials, and nationally recognized experts on various aspects of Appalachian culture are in permanent residence on campus.

Admission Requirements

Contact Ronald L. Lewis, Coordinator.

Degree Requirements

Appalachian studies majors must fulfill all University and College of Arts and Sciences degree requirements. In addition they take 30 credit hours of approved courses including six hours of literature from Engl. 45, 145, 241, or 245, six hours of history from Hist. 153, 163, 175 or 373, and six hours of social science from Soc. & A. 140, 223, Geog. 220, or Econ. 255.

Art History

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Margaret T. Rajam, Coordinator
419-A Creative Arts Center

Nature of Program

The interdepartmental major in art history gives an interdisciplinary approach to the study of objects of art: their manufacture, their use, and the civilizations and modes of thought that produced them. This program provides a systematic foundation in the history of art of the western world. Students are encouraged to add a broad background from selected courses in art, business and economics, English, foreign languages, history, humanities, journalism, library science, music, philosophy, public administration, religious studies, sociology and anthropology, or theatre. A senior research project, on an approved topic selected by the student, is completed during the last semester. Courses in art history and studio art are offered in the College of Creative Arts and those in history, anthropology, and language in the College of Arts and Sciences.

Admission Requirements

Contact Margaret T. Rajam, Coordinator

Biology

Degree: Bachelor of Arts
Leah A. Williams, Chairperson
Dennis C. Quinlan, Associate Chairperson

Nature of Program

The Bachelor of Arts with a major in biology prepares students for professional careers in the life sciences. As a biology major, a student will choose courses from three major areas: ecology and evolution; cellular and molecular biology; or animal and plant physiology, anatomy, and development. In the available courses, students will experience a wide variety of classroom environments: the typical large lecture section, small group discussions, and intensive, laboratory-oriented courses. These laboratory courses include plant ecology, population biology, recombinant DNA technology, cellular/molecular biology methods as well as lab experiences in other biological disciplines.

Required courses and electives provide a solid foundation for graduate study in many of the specialized biological disciplines, for professional study in medicine, dentistry, or other health-related sciences, or for technical careers in government or private industry.

Admission Requirements

In addition to college requirements, admission to the program requires a 2.0 overall grade-point average and at least a cumulative G.P.A. of 2.0 for courses in biology. To maintain biology major status and graduate, students must maintain at least a 2.0 cumulative average for biology courses at WVU.

Degree Requirements

The Bachelor of Arts with a major in biology requires a minimum of 31 hours to a maximum of 42 hours in biology, with 128 hours required for graduation.
Required courses include Biology 15, 17, 19, and 21, which must be taken in this sequence; Chemistry 15 or 17, which must be taken concurrently with Biology 15;

Chemistry 16 or 18, 133, 134, 135, and 136 or with the permission of the department, Chemistry 16 or 18, 133, 135 and Ag. Biochem. 210. The math requirement includes either Math 15 and 16 or Math 128 and Statistics 101. Physics 1 or 11 and 2 or 12 are also requirements. Fifteen hours of required biology electives, one of which must have a laboratory, may be selected from the following list: Biol. 105 (limited to 4 hours credit), 107 (limited to 4 hours credit), 151, 152, 169, 201, 211, 212, 214, 216, 219, 231, 232, 233, 234, 235, 242, 243, 246, 247, 250, 251, 252, 253, 254, 255, 257, 259, 260, 261, 262, 263, 268, 269, 270, and 271. Permission of the department must be obtained to enroll in Biology 109, 194, and 209. Graduate (300-level) courses in biology may be taken if approved by the dean and department.

Biology 61, 62, 109, 166, 194, 209A, and 309A do not satisfy the required 15 hours of electives in biology. They can serve as general electives.

Honors Program

A departmental Honors Program for qualified students provides the opportunity to do independent research. To be eligible, a student must have a 3.4 overall average and the approval of the departmental honors faculty. Qualified students should consult their adviser about admission.

Individual original research, a senior thesis, and a seminar are required parts of the Honors Program.

Faculty

Professors

Charles H. Baer, Ph.D. (U. Md.). *Emeritus.*
Herald D. Bennett, Ph.D. (U. Iowa). *Emeritus.*
Jesse F. Clovis, Ph.D. (Cornell U.). *Emeritus.*
Lloyd R. Gribble, Ph.D. (WVU). *Emeritus.*
Martin W. Schein, Sc.D. (J. Hopkins U.). *Emeritus.*
David F. Blaydes, Ph.D. (Ind. U.). Plant physiology, Cytokinins.
Melvin L. Brown, Ph.D. (WVU). Adjunct. Systematic botany.
Roy L. Butcher, Ph.D. (Iowa St. U.). Adjunct. Endocrinology, Reproductive physiology.
Roy B. Clarkson, Ph.D. (WVU). Herbarium Curator. Systematic botany.
William E. Collins, Ph.D. (U. Wisc.). Director, University Honors Program. Endocrinology, Animal science.
John J. DeCosta, Ph.D. (Ind. U.). Limnology, Ecology, Invertebrate biology.
John E. Hall, Ph.D. (Purdue U.). Adjunct. Parasitology.
Edward C. Keller, Jr., Ph.D. (Penn St. U.). Environmental science, Genetics, Science education.
Gerald E. Lang, Ph.D. (Rutgers U.). Dean. Plant ecology, Biogeochemistry, Wetland ecology.
Dennis C. Quinlan, Ph.D. (U. Rochester). Associate Chair, Cellular biology, Cell membranes, Cancer biology.
Richard P. Sutter, Ph.D. (Tufts U.). Cellular/molecular biology, Developmental biology, Molecular genetics.
Stanley Wearden, Ph.D. (Cornell U.). Adjunct. Biostatistics.
Robert C. Whitmore, Ph.D. (B. Young U.). Adjunct. Ornithology, Wildlife management.

Associate Professors

Dorothy C. Dunning, Ph.D. (Tufts U.). Animal behavior, Neurophysiology, Invertebrate biology.
Ramsey H. Frist, Ph.D. (U. Pitt). Cellular/molecular biology, Virology, Electron microscopy.
Roland B. Guthrie, Ph.D. (WVU). Arboretum Curator. Plant anatomy, Dendrology, Plant geography.
James B. McGraw, Ph.D. (Duke U.). Plant ecology, Plant physiology.

Joseph A. Marshall, Ph.D. (U. Md.). Animal behavior, Ichthyology, Aquaculture.
Ethel C. Montiegel, M.S. (WVU). Animal physiology, Vertebrate anatomy, Developmental biology.
Leah A. Williams, Ph.D. (WVU). Chairperson. Developmental biology, Vertebrate anatomy, Cellular/molecular biology.

Assistant Professors
Ann L. Chester, Ph.D. (Duke U.). Adjunct. Plant ecology.
Patricia E. Gallagher, Ph.D. (U. Tenn.). Cellular/molecular biology, DNA repair mechanisms.
Keith Garbutt, Ph.D. (U. Wales). Population genetics, Ecological genetics.
Karen S. Katula, Ph.D. (Northwestern U.). Cellular/molecular biology, Molecular genetics, Recombinant DNA.
Michael A. Kotarski, Ph.D. (Cornell U.). Cellular/molecular biology, Gene regulation in *Drosophilia.*
Deborah A. Leonard, Ph.D. (Cornell U.). Adjunct. Cellular/molecular biology, Regulation of cholesterol utilization in cultured cells.

Board of Regents Bachelor of Arts

Especially designed for the adult, non-traditional student, the Board of Regents Bachelor of Arts degree offers the opportunity to gain credits for work and life experience (college equivalent credit).

Degree Requirements

Total credits: 128.

Upper-division credits: 40.

General education: 36, including communications, six; humanities, six; natural sciences, six; and social sciences, six.

Admission

Admission to the program is open to students who graduated from high school at least four years ago. For those passing a high school equivalency test, admission must be four years after their class graduated from high school. Students who have been enrolled full time at WVU during the preceding calendar year are not eligible for admission. Non-traditional students over 25 years of age may be granted a waiver of this regulation.

Fees

Tuition and fees are the same for the Regents B.A. as for other undergraduate degree programs, except that there is an additional $100 assessment fee charged to those students who request evaluation of their work and life experience.

Detailed information is available from: Coordinator, Board of Regents B.A. Degree Program, WVU Student Services Center, Morgantown, WV 26506. Telephone (304) 293-5441.

Chemistry

Degrees: Bachelor of Arts, Bachelor of Science
Anthony Winston, Chairperson
Paul W. Jagodzinski, Associate Chairperson
Ronald B. Smart, Associate Chairperson

Nature of Program

The Department of Chemistry offers two degree programs: the Bachelor of Science (Chemistry) and the Bachelor of Arts with a major in chemistry. These two

programs meet the needs of all students who have an interest in the broad field of chemistry.

In the fall of 1985, the Department of Chemistry began its first full year in a completely renovated Clark Hall. The renovation has given the department a state-of-the-art facility for undergraduate chemistry. Clark Hall now includes many new instruments, numerous safety features, excellent ventilation and ample hoods, and complete accessibility for the physically handicapped. The department also has modern research facilities in the adjacent Chemistry Research Laboratory where advanced undergraduates may participate in research projects.

The Bachelor of Science (Chemistry) is certified by the American Chemical Society. This program is designed for those students who desire to qualify for professional positions in industry and governmental services as well as those who plan to do graduate work in chemistry or allied areas in preparation for research careers in industry or coupled with university teaching.

The Bachelor of Arts with a major in chemistry is designed for those students who plan careers requiring a good background in the basic principles of chemistry. Areas such as medicine, dentistry, or other health-related sciences, secondary school teaching, chemical laboratory technical work, or even law or business may be pursued by proper choice of electives.

The two programs are similar during the first two years. Students in the B.S. program should complete the calculus requirement as soon as possible as a prerequisite for both the physics and physical chemistry sequences. The two degree programs differ primarily in the chemistry and foreign language requirements. The B.S. program requires a year of scientific German and more upper-level chemistry than is required in the B.A. program.

Chemistry Scholarships

In addition to financial aid offered by the University, the department maintains two scholarship programs specifically for chemistry majors. The John A. Moore Chemistry Scholarships are awarded to students who are West Virginia residents, are in the B.S. program, and have records of outstanding achievement and demonstrated financial need. The Charles L. Lazzell Scholarships are awarded to students in either the B.S. or B.A. programs with records of outstanding achievement and demonstrated financial need. Scholarship recipients are expected to remain as chemistry majors and to maintain a 3.0 average in their degree program in order to be eligible for continued support.

Admission Requirements

In addition to College requirements, admission to either program and continuance in each requires at least a cumulative average of 2.0 for courses in chemistry taken in the WVU Department of Chemistry.

Degree Requirements

Bachelor of Science (Chemistry): A total of 136 hours is required, subject to the general course exclusions for all degrees. The foreign language requirement must include two semesters of scientific German. The following courses are required: Chem. 17 and 18 or Chem. 15, 16, and 115; Chem. 133, 134, 135, 136, 201, 203, 210, 213, 222, 223, 235, 246, 247, 248, and 249 plus nine hours of approved chemistry electives; Math. 15, 16, 17; Phys. 11, 12; Ger. 121, 122. The nine hours of approved chemistry electives must be selected from the following courses: Chem. 192, 194, 202, 211, 212, 237, 239, 241, 243, 244, 250, 315, 331, 332, 341, and Ag. Bi. 310, subject to the restriction that only six hours of Chem. 192, 194 or 202, separately or combined, may be counted toward the nine-hour requirement. The following courses in other areas are recommended for consideration as general electives: Ag. Bi. 210; C.S. 1,

120; E.C.E. 272; Engl. 208; Math. 18, 113; Phys. 124, 225; Stat. 231. A 2.0 average must be maintained in all chemistry courses above Chem. 202.

A "C" or better grade in all prerequisites for chemistry courses is required for chemistry majors; the courses involved are chemistry courses, Physics 12, Math 16, and Math 17.

Bachelor of Arts With a Major in Chemistry: The following courses are required: Chem. 15, 16, and 115, or Chem. 17 and 18; Chem. 133, 134, 135, 136, 141, 142, plus nine hours of approved chemistry electives; eight hours of non-chemistry electives from Cluster C and/or Engineering courses that include a lab, excluding other required courses; Math. 15, 16; Phys. 1, 2. The nine hours of approved chemistry electives must be selected from the following courses: Chem. 192, 194, 201, 202, 203, 210, 211, 212, 213, 235, 237, 239, 241, 243, 244, 315, 331, 332 subject to the restriction that only six hours of Chem. 192, 194, or 202, separately or combined, may be counted toward the nine hour elective requirement.

A "C" or better grade in all prerequisites for chemistry courses is required for chemistry majors; the courses involved are chemistry courses, Physics 2, and Math 16. Also a 2.0 average must be maintained in all chemistry courses above Chem. 202.

Options

Students in the B.A. program may request to use Ag. Bi. 210 or 310 to meet part of the nine hour chemistry elective requirement; however, at least three hours must be selected from chemistry courses numbered 210 or higher.

Students in the B.A. program may take Chem. 246, 247 and 248 in lieu of Chem. 141 and 142 and three hours of chemistry electives. Chem. 249 may be taken as two hours of chemistry elective.

Students in either degree program may seek admission to the Departmental Honors Program. A student must have a 3.5 average in chemistry courses taken at WVU and must have the endorsement of the chemistry faculty. A student may apply for admission to the program at any time after the student's first semester and no later than three semesters before graduation. The program includes a written report based upon a research project performed under the supervision of a member of the chemistry faculty. For further information a student should consult the associate chairperson.

Faculty

Professors

Nar S. Dalal, Ph.D. (U. Brit. Columbia). Physical chemistry, Magnetic resonance, Fossil fuels.

Gabor B. Fodor, Ph.D. (U. Szeged, Hungary). Centennial *Emeritus.*

George A. Hall, Ph.D. (Ohio St. U.). *Emeritus.*

James B. Hickman, Ph.D. (Penn St. U.). *Emeritus.*

George L. Humphrey, Ph.D. (Ore. St. U.). *Emeritus.*

Denis W. H. MacDowell, Ph.D. (MIT). Organic chemistry, Synthesis, Thiophenes.

William R. Moore, Ph.D. (U. Minn.). Organic chemistry, Strained molecules, Reaction mechanisms.

Chester W. Muth, Ph.D. (Ohio St. U.). *Emeritus.*

Robert S. Nakon, Ph.D. (Tex. A&M U.). Bioinorganic chemistry, Chelates, Catalysis.

Jeffrey L. Petersen, Ph.D. (U. Wisc.). Physical inorganic chemistry, Transition metal complexes, X-ray diffraction.

Peter Popovich, Ph.D. (Wash. St. U.). *Emeritus.*

Kenneth Showalter, Ph.D. (U. Colo.). Eberly Family Distinguished Professor of Physical Chemistry. Physical chemistry, Chemical kinetics, Multistability and oscillating systems.

Anthony Winston, Ph.D. (Duke U.). Organic Chemistry, High polymers, Metal chelating polymers.

Associate Professors

Charles Jaffe, Ph.D. (U. Colo.). Theoretical chemistry, Molecular dynamics, Nonlinear mechanics.

Paul W. Jagodzinski, Ph.D. (Tex. A&M U.). Chair. Biophysical chemistry, Raman spectroscopy, Enzyme structures, Molecular spectroscopy.

John H. Penn, Ph.D. (U. Wisc.). Organic chemistry, Photochemistry, Electron transfer.

Ronald B. Smart, Ph.D. (U. Mich.). Associate Chair. Environmental analytical chemistry, Electrochemistry, Trace metals.

Kung K. Wang, Ph.D. (Purdue U.). Organic chemistry, Stereoselective synthesis, Natural products.

Assistant Professors

Harry O. Finklea, Ph.D. (Calif. Inst. Tech.). Analytical/Physical chemistry, Properties of organized monolayers deposited on electrodes.

Fred L. King, Ph.D. (U. Va.). Analytical chemistry, Mass spectrometry, Trace elements, Gas-phase ion chemistry.

Raymond J. Lovett, Ph.D. (Ariz. St. U.). Analytical chemistry, Computer simulation in analysis, trace metal determinations, and interactions of chemicals with solids.

Plato A. Magriotis, Ph.D. (SUNY at Stony Brook). Organic chemistry, Organic synthesis and Bioorganic chemistry.

Alan M. Stolzenberg, Ph.D. (Stanford U.). Inorganic chemistry, Bioinorganic chemistry, Organometallic chemistry.

Suggested Chemistry (B.A.) Curriculum

First Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 15 (or 17)	4 (or 5)	Chem. 16 (or 18)	4 (or 5)
Math. 15 (or 3)	4 (or 3)	Math. 16 (or 4)	4 (or 3)
Cluster Elective	3	English 1	3
Phys Ed (optional)	1	Phys Ed (optional)	1
Non-Chemistry Elect.*	4	Non-Chemistry Elect.*	4
	16 (or 17)		16 (or17)

Second Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 115 (or organic if 17 & 18 taken)	4	Chem. 133 (or Chem. 134)	3
		Chem. 135 (or Chem. 136)	1
Physics 1	4	Physics 2	4
Foreign Language	3	Foreign Language	3
Cluster Elective (or Math. 15)	3 (or 4	Cluster Elective (or Math. 16)	3 (or 4)
English 2	3	Cluster Elective	3
	17 (or 18)		17 (or 18)

Third Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 134	3	Chem. 141	3
Chem. 136	1	Chem. 142	1
Cluster Elective or Foreign Language (if necessary)	3	Cluster Elective or Foreign Language (if necessary)	3
Cluster Elective	3	Cluster Elective	3
Cluster Elective	3	Cluster Elective	3
Fine Arts	3	Chem. Elective	3
	16		16

*Must include eight hours of Cluster C and/or engineering courses that include a lab excluding other required courses and excluding Chem. 192, 194, and 202.

Fourth Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. Elective	2 (or 3)	Chem. Elective	3 (or 2)
Cluster Elective (if needed)	3	Cluster Elective (if needed)	3
General Elective	10 (or 9)	General Electives	9 (or 10)
	15		15

Total Hours: 128

Suggested Chemistry (B.S.) Curriculum

First Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 17 (or 15)	5 (or 4)	Chem. 18 (or 16)	5 (or 4)
Math. 15	4	Math. 16	4
Cluster Electives	6	English 1	3
General Elective	3	Cluster Electives	6
	18 (or 17)		18 (or 17)

Second Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 133	3	Chem. 134	3
Chem. 135	1	Chem. 136	1
Phys. 11	4	Phys. 12	4
Ger. 1 (if necessary)	3	Ger. 2 (if necessary)	3
Math. 17	4	Cluster Elective	3
English 2 (or Chem. 115 if Chem. 15 & 16 were completed)	3 (or 4) 18 (or 19)	Fine Arts (or English 2)	3 17

Third Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 235	5	Chem. 210	3
Chem. 246	3	Chem. 248	3
Ger. 121	3	Chem. 247	1
Cluster Electives (and Fine Arts if Chem. 115 was completed)	6(or 9)	Ger. 122	3
		Chem. Elective	3
		General Elective	3
	16 (or 19)		16

Fourth Year

First Semester	*Hr.*	*Second Semester*	*Hr.*
Chem. 201	1	Chem. 203	1
Chem. 213	1	Chem. 223	2
Chem. 222	3	Chem. Electives	3
Chem. 249	2	General Electives	8 (or 6)
Chem. Electives	3	Cluster Electives	3
General Electives	6		17 (or 15)
	16		

Total Hours: 136

Communication Studies

Degree: Bachelor of Arts
James C. McCroskey, Chairperson
John D. Shibley, Undergraduate Adviser

Nature of Program

The Department of Communication Studies offers a curriculum to meet the needs of liberal-arts and pre-professional students and of students oriented toward communication-related careers. The undergraduate curriculum focuses upon the application of theory and research in human communication to a variety of personal, social, and organizational settings. Majors may elect to follow either a communication theory and research track or an applied communication studies track.

Communication Theory and Research: This curriculum is designed for students who desire a broad, liberal-arts emphasis or who plan to enter graduate study in communication. Students acquire a background in the areas of interpersonal, nonverbal, organizational, and mass communication.

Admission Requirements: Students may be admitted to this curriculum at one of two points in their undergraduate program:

1. The semester following the semester in which they complete 45 hours of course work. Students admitted at this point must have a cumulative grade-point average (GPA) of 3.0 and have completed the following courses in the department with a combined GPA of 3.0: Comm. 11, 12 or 14, and 160.

2. Any semester subsequent to the above. Students admitted at this point must have a cumulative GPA of 3.0; a combined GPA of 3.0 in all courses taken in the department; and a combined GPA of 3.0 in Comm. 11, 12 or 14, and 160.

Completion Requirements: All students must complete a minimum of 27 hours of credit, 18 of which must be in the Department of Communication Studies, following the semester in which they are admitted to this program. Courses taken during the semester in which the student is admitted may not be counted toward the required minimum of 27 hours. Course requirements are Psychology 1 and 2, Statistics 101, and 30 hours of electives in the Department of Communication Studies beyond the six required for admission.

Applied Communication Studies: This curriculum is designed for students who plan careers in business or government organizations. It combines the general major in communication studies with a sequence of courses outside the department to prepare students for communication-related careers.

Admission Requirements: Students may be admitted to this curriculum at one of two points in their undergraduate studies:

1. The semester following the semester in which they complete 45 hours of course work. Students admitted at this point must have a cumulative grade-point average (GPA) of 2.5 and have completed the following courses in the department with a combined GPA of 2.5: Comm. 11, 12 or 14, and 160.

2. Any semester subsequent to the above. Students admitted at this point must have a cumulative GPA of 2.5; a combined GPA of 2.5 in all courses taken in the department; and a combined GPA of 2.5 in Comm. 11, 12 or 14, and 160.

Completion Requirements: All students must complete a minimum of 27 hours of credit, 18 of which must be in the Department of Communication Studies, following the semester in which they are admitted to this program. Courses taken during the semester in which the student is admitted may not be counted toward the required 27 hours. Course requirements for both options outlined below are Bus. A. 120 and 130, Psych.1, and Engl. 105 and 208.

Students must also complete one of the following optional tracks:

Interpersonal and Organizational Communication: Comm. 12, 106, 109, 110, 133, 206; 15 hours of Communication Studies electives from Comm. 13, 14, 21, 80, 105, 107, 111, 113, 134, 135, 140, 180, 191, 221, 230, and 231; Psych.101, 151, and 251.
Public and Mass Communication: Comm. 14, 80, 106, 180, 221, 230; 15 hours of Communication Studies electives drawn from Comm. 12, 13, 105, 107, 109, 110, 111, 113, 133, 134, 135, 140, 187, 191, 206, and 231; P. R.111; SPA 80; and Adv. 113.

Graduation

Students must have a cumulative GPA of 2.5 in all courses in the department to be certified for graduation with a major in communication studies. Courses in communication studies which the student wishes to count toward the major must be completed with a grade of C or better. The minimum requirement for a major in communication studies is 36 semester hours of credit. A total of 42 hours in communication studies may be counted toward graduation.

Advisement

Before or during the first semester of the sophomore year, students interested in pursuing a major in communication studies should consult with a departmental adviser.

Minor in Communication Studies

Students with a major in the College of Arts and Sciences may elect to complete a 15 credit-hour minor in the field of communication studies. This minor is designed to provide a broad overview of the field. Comm. 11, 80, 106, and 109 (ten hours) are required. In addition, the student must complete Comm. 12 or 14 (two hours) and one of the following: Comm. 135, 160, or 187 (three hours). Students must maintain an overall GPA of 2.0 in the courses counted toward the minor to be certified as a minor in communication studies at graduation.

Faculty

Professors

Leonard M. Davis, Ph.D. (Northwestern U.). *Emeritus.*
Donald W. Klopf, Ph.D. (U. Wash.). Intercultural and small-group communication, Persuasion.
James C. McCroskey, Ed.D. (Penn St. U.). Chair. Communication avoidance, Instructional, interpersonal and organizational communication.
Virginia P. Richmond, Ph.D. (U. Nebr.). Interpersonal, organizational, nonverbal, and instructional communication.
Lawrence R. Wheeless, Ph.D. (Wayne St. U.). Instructional, interpersonal and organizational communication, Empirical methodology.

Associate Professors

Melanie Booth-Butterfield, Ph.D. (U. Mo.). Interpersonal, nonverbal, and instructional communication.
Joan S. Gorham, Ed.D. (Nor. Ill. U.). Interpersonal, nonverbal, instructional, and mass communication.
Walter H. Rockenstein, Ph.D. (Northwestern U.). *Emeritus.*
John D. Shibley, Ph.D. (Ohio St. U.). Film appreciation, Communication and nonviolence.

Assistant Professors

Steven Booth-Butterfield, Ed.D. (WVU). Mass, interpersonal, and instructional communication, persuasion.
Enid J. Portnoy, Ed.D. (WVU). Communication and aging, Nonverbal communication.

Comparative Literature

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Elizabeth Madison, Coordinator

Nature of Program

The comparative literature interdepartmental major examines literature in its many aspects without national or linguistic boundaries. The program is designed for those students who wish to explore the languages and literatures of at least two cultures and provides for those students a liberal education based on a comparative study of literary masterpieces and their relationship to history, philosophy, and the fine arts. The curriculum seeks to develop a student's ability to read critically, to aid the student in gaining a more integrated sense of general literary history, and to prepare the student to investigate problems involving more than one literature (for example, the study of themes and myths, genres and forms, movements and eras, literature and the other arts, literary theory and criticism). The undergraduate degree provides a basis for the following areas of professional specialization: graduate study in comparative literature, English, or foreign language; teaching of literature or foreign language; government work, international relations, or business administration, particularly in those areas of government or business which require an extensive knowledge of foreign culture and the ability to communicate well in both English and a foreign language.

Admission Requirements

Contact Elizabeth Madison, Coordinator.

Degree Requirements

A student must fulfill all University and College of Arts and Sciences degree requirements. A sample course of study for the undergraduate major in comparative literature follows:

Courses in the Department of English. Required: English 125, 232; one language course (111, 113, 210, 211); 12 hours from among English 35/36, 21/22, 24/25. Recommended: Upper-division work in American, British, or world literature. Total hours required: 22.

Courses in the Department of Foreign Languages. Required: six hours of advanced literature in the first foreign language; 12 hours from the following categories: second foreign language; additional language or literature courses in the first foreign language; literature in translation courses. Total hours required: 18.

The student is also required to take a one-hour seminar in methodology (directed study).

Computer Science

Degree: Bachelor of Science
Donald F. Butcher, Chairperson
Wayne A. Muth, Associate Chairperson
Y. V. Ramana Reddy, Director, Artificial Intelligence Laboratory
Stanley Wearden, Director, Computer Science Graduate Programs
Franz X. Hiergeist, Pre-Computer Science Adviser

Nature of Program

The Department of Statistics and Computer Science offers a major in computer science leading to a Bachelor of Science. The curriculum is designed to qualify students for professional positions in business, industry, research, government service, or graduate study in computer science.

The computer science major is intended to expose students to the following areas of the discipline: mathematical procedures, programming languages, systems programming, and software engineering. After taking an upper-division course in each of these areas, students are required to take additional advanced courses in areas of interest to them.

Normally, students are first admitted to the pre-computer science program of study. After meeting the requirements, the student then moves into the computer science program. This transition into the computer science program normally takes place at the end of the sophomore year.

Admission Requirements

Computer Science Program of Study

General requirements for admission to the pre-computer science program of study are that all prospective students must qualify for admission to WVU and to the College of Arts and Sciences and present secondary school credit for two units of algebra, one unit of geometry, and a half unit of trigonometry or advanced mathematics or one unit of chemistry or physics.

Additional Admission Requirements: Applicants must take either the Standard ACT test or the SAT test. Automatic admission to pre-computer science is granted if any two of the three requirements shown below are met:

- A 3.0 grade-point average in high school;
- A math ACT score of 22, or math SAT score of 467;
- A composite ACT score of 22, or combined SAT score of 920.

Applicants not satisfying these admission requirements may gain admission to pre-computer science as transfer students as described below.

Transfer Students: Students wishing to transfer into pre-computer science or computer science must satisfy WVU and Arts and Sciences admission requirements and must petition the Department of Statistics and Computer Science for admission. Petitions should be addressed to the Computer Science Academic Standards Committee with a transcript of all college level course work attempted and an indication of when the student wants to transfer to Computer Science (May or August). Petitions are evaluated about April 1 for May admission and about July 15 for August admission.

Transfer students are expected to meet the following:

- A grade-point average of at least 3.0 in all college-level work attempted; and
- Grades as listed in the next catalog section under "Computer Science Degree Program" for any of C.S. 15, C.S. 16, C.S. 26, C.S. 56, C.S. 76, Math 15, and/or Math 16 which have been attempted.

The number of transfer students accepted into the department is governed by the enrollment capacities of the degree programs. First admission priority is given to those students currently matriculated at WVU; second priority, to students enrolled in computer science curricula at external colleges and universities; third priority, to students enrolled in other degree programs at external colleges and universities. Within the last two priorities, preferential admission is in the following order: West Virginia residents, U.S. citizens or permanent residents, and international students.

Computer Science Degree Program

To be admitted to the Bachelor of Science degree program with a major in computer science, students must earn these minimum grades:

1. A minimum of a"C" in C.S. 15 before enrolling in C.S. 16.
2. A minimum of a"C" in C.S. 16 and at least one "B" in either C.S. 15 or C.S. 16 before enrolling in any of C. S. 26, C.S. 56 or C.S. 76.
3. A minimum of a"C" in C.S. 26, C.S. 56 and C.S. 76 and at least one "B" in one of these courses.
4. A minimum of a "C" in Math. 15, Math. 16, and Stat.201. Students are permitted to repeat only one course in the C.S. 15 and C.S.16 sequence and only one course in

the C.S. 26, C.S. 56, and C.S. 76 group. The first grade in any repeated course will not be considered for the purpose of meeting departmental admission requirements.

No student may enroll in any 100-level computer science course until the student has satisfied the first three requirements above.

Degree Requirements

A student must earn at least a "C" in every computer science course to be counted toward meeting degree requirements.

Required courses for all computer science majors are: Math. 15 and 16, Statistics 201, Computer Science 15, 16, 26, 56, 76, 126, 136, 156, and 176. Students complete additional degree requirements by satisfying the course requirements in one of the following two tracks.

Computer science software development: Intended to provide students with substantial experience in the design and implementation of large software systems.

A. Two courses from C.S. 278, C.S. 286, or C.S. 288;

B. One course from C.S. 256 or C.S. 266;

C. One additional computer science course from among the 210, 220, 230, 240 series or an approved technical elective.

Computer science theory: Intended to prepare students for continued study at the graduate level or direct entry into a professional position in the discipline.

A. Both C.S. 215 and C.S. 216;

B. One course from C.S. 236 or C.S. 246;

C. One additional computer science course from among the 250, 260, 270, or 280 series or an approved technical elective. An approved technical elective is any computer science course at the 200- or 300-level excluding C.S. 301, Stat. 221, Math. 241, Cp. E. 272, 372, or 373, or I. E. 284.

Requirements for a Minor in Computer Science

Any student admitted to a degree program in the College of Arts and Sciences may take a minor in computer science by satisfying the following requirements: C.S. 15, 16, 26, 56, and 76; Math. 15 and 16 and Stat. 201; One course from among C.S. 126, 136, 156, or 176.

A student must earn at least a "C" in every computer science, mathematics, and statistics course counted toward meeting the minor field requirements.

Faculty

Professors

Donald F. Butcher, Ph.D. (Iowa St. U.). Chair, Statistics and Computer Science. Design and analysis of experiments, Monte Carlo simulation, Regression analysis.

Erdogan Gunel, Ph.D. (SUNY-Buffalo). Statistics. Bayesian inference, Categorical data analysis, Biometry.

E. James Harner, Jr., Ph.D. (Cornell U.). Statistics. Robust estimation, Statistical computation, Modeling observational studies.

Franz X. Hiergeist, Ph.D. (U. Pitt). Computer Science. Mathematics of computation.

Wayne A. Muth, Ph.D. (Iowa St. U.). Associate Chair, Computer Science. Simulation, Mathematical modelling, Computer performance.

Y. V. Ramana Reddy, Ph.D. (WVU). Computer Science. Artificial intelligence, Knowledge based simulation, Computer graphics.

William V. Thayne, Ph.D. (U. Ill.). Statistics. Statistical genetics, Regression analysis.

Edwin C. Townsend, Ph.D. (Cornell U.). Statistics. Linear models, Regression analysis.

George E. Trapp, Ph.D. (Carnegie-Mellon U.). Computer Science. Numerical analysis, Mathematical programming, Network models.

Stanley Wearden, Ph.D. (Cornell U.). Statistics. Biometrics, Statistical genetics, Population biology.

Associate Professors

John M. Atkins, Ph.D. (U. Pitt). Computer Science. Design of database management systems, Analysis of algorithms, Mathematics of computation.

Daniel M. Chilko, M.S. (Rutgers U.). Statistics. Statistical computing, Computer graphics.

William H. Dodrill, M.S. (Columbia U.). Computer Science. Microcomputer applications, Applications in medicine.

Shirley M. Dowdy, Ph.D. (U. Notre Dame). Assoc. Dean, Acad. Affairs; Statistics. Sampling, Statistical methods, Software for statistical education.

D. Michael Henry, Ph.D. (TCU). Computer Science. Databases, Cryptography, Micro interfacing.

Gerald R. Hobbs, Jr., Ph.D. (Kans. St. U.). Statistics. Nonparametric statistics, Regression analysis.

James D. Mooney, Ph.D. (Ohio St. U.). Computer Science. Operating systems, Text processing, Computer architecture.

Frances L. Van Scoy, Ph.D. (U. Va.). Computer Science. Programming languages and compilers, Software development environments, Parallel processing.

Assistant Professors

Magdalena Niewiadomska-Bugaj, Ph.D. (Adam Mickiewicz U., Poznan, Poland). Statistics. Discriminate analysis, Statistical expert systems, Statistical computing.

David A. Eichmann, Ph.D. (U. Iowa). Computer Science, Database systems, Programming languages, Software development environments.

Raghu R. Karinthi, Ph.D. (U. Md.). Computer Science. Solid modelling, Automatic feature extraction, AI process planning.

Sitaraman Muralidharan, Ph.D. (Ohio State U.). Computer Science. Software engineering, Data structures, Software reuse.

Sumitra M. Reddy, Ph.D. (WVU). Computer Science. Knowledge representation, Ada.

Kankanahalli Srinivas, Ph.D. (New Mexico State U.). Computer Science. Artificial intelligence, Connectionism/neural networks, Parallel processing.

Visiting Assistant Professors

Asesh K. Das, Ph.D. (Visua-Bharati U.) Computer Science. Expert systems, Intelligent tutoring, Knowledge-based simulation.

Lecturers

Alan Butcher, M.S. (WVU). Computer Science. Knowledge based simulation.

James Foltz, B.S. (WVU). Computer Science. Systems programming.

Winsome D. Mundy, M.S. (WVU). Computer Science. Software engineering.

Ravi Raman, M.S. (WVU). Computer Science. Rule based programming.

Dance and Liberal Studies

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Alan W. Jenks, Coordinator

Nature of Program

This interdepartmental major is offered cooperatively with the dance program of the School of Physical Education. It is designed for the student with an interest in dance who wishes to pursue a broad liberal arts education with a concentration in a specific area within the College of Arts and Sciences. Students must fulfill all requirements of the University and of the College of Arts and Sciences.

Admission Requirements

Contact Alan W. Jenks, Coordinator.

Degree Requirements

Dance courses required for this major include 12 hours of technique classes (ballet, modern, and jazz); four courses in dance theory and related subjects; 12 hours of dance electives chosen from such classes as choreography, dance production, theatre dance, movement and rhythms, sports injury, and kinesiology. In addition, the student will earn nine hours through participation in one of the University's performing dance companies over a number of semesters before graduation. A total of 42 hours in dance is required.

Arts and Sciences concentration may be selected from any department in the College. A total of 30 hours in the area of specialization is specified.

Economics

Degree: Bachelor of Arts
William S. Reece, Chairperson

Nature of Program

The Department of Economics offers two majors in economics: one through the College of Business and Economics and the other through the College of Arts and Sciences. The College of Business and Economics grants the degree of Bachelor of Science with a major in economics. The College of Arts and Sciences grants the Bachelor of Arts with a major in economics.

The program leading to the B.A. degree is designed for students who wish to combine fundamental training in economics with a liberal arts education. In addition to the liberal studies and related requirements, students have in excess of 40 credit hours of unrestricted electives.

The student of economics is taught to identify the costs and the benefits of a decision, which are sometimes not obvious. The economist has the skills to identify the real consequences of a decision. That skill is valued highly.

Economics is a useful major for anyone interested in a career in politics, business, law, foreign service, government, banking, or any other field in which the ability to make or analyze policy decisions is important. The demand for people with degrees in economics, both at the graduate and undergraduate levels, is high.

Economics deals with some of today's burning issues: acid rain, support for the poor, international trade, unemployment, capital punishment, education, the deficit, the third world, national defense.

Admission Requirements

Students making application for initial admission to the major in economics must meet the following requirements:

1. Completion of 58 or more credit hours with a cumulative grade-point average of 2.5 or better;
2. Completion of each of the following courses with a grade of C or better: Econ. 54, 55, and 125;
3. Completion of Engl. 1 and 2, and
4. A semester of calculus with a grade of C or better and Math. 128 or 15.

Degree Requirements

Econ. 54, 55, 125, 211, 212, and one of the following courses: Econ. 110, 216, and 270. Any student planning to pursue graduate work in economics should take Math. 15 and 16. Additional recommended courses can be determined in consultation with an economics adviser.

Majors are also required to take 15 additional hours of economics courses numbered 100 or above for a minimum of 27 upper-division course hours in economics. Economics majors must maintain a grade-point average of 2.0 for all economics courses (to be computed using the last grade earned in each economics course).

Economics majors are required to have a grade of C or better in Econ. 211 and 212. Economics majors may take a maximum of nine of their 33 credit hours of economics courses out of residence. Transfer students must take a minimum of 15 credit hours of upper division economics courses in residence. The undergraduate adviser can waive this requirement under special circumstances.

Faculty

Professors

Donald R. Adams, Jr., Ph.D. (U. Penn). American economic history, European economic history, Economic development.

Jagdeep Bhandari, Ph.D., J.D. (SMU, Duquesne U.). International trade and finance, International law.

Robert D. Britt, Ph.D. (U. Colo.). Managerial economics, History of economic thought, Economic history.

Ming-jeng Hwang, Ph.D. (Tex. A&M U.). General theory, Urban and regional economics, Mathematical economics.

Andrew W. Isserman, Ph.D. (U. Penn). Regional economics.

Kern O. Kymn, Ph.D. (U. Chicago). General theory, Mathematical economics, Econometrics.

Walter C. Labys, Ph.D. (Nottingham U.). Adjunct. Commodity market modeling, Mineral economics, Econometrics.

Patrick C. Mann, Ph.D. (Ind. U.). Utility economics, Industrial organization.

Douglas Mitchell, Ph.D. (Princeton U.). Monetary theory, Macroeconomic theory.

William S. Reece, Ph.D. (Wash. U.,St. Louis). Chair. Public economics, Econometrics.

Tom S. Witt, Ph.D. (Wash. U.,St. Louis). Econometrics, Energy economics, Regional economics.

Associate Professors

Arnab K. Acharya, Ph.D. (U. Ill.). Microeconomic theory, Development, Mathematical economics.

Brian J. Cushing, Ph.D. (U. Md.). Urban and regional economics, Econometrics, Public finance.

Clifford B. Hawley, Ph.D. (Duke U.). Labor economics, Microeconomic theory, Econometrics.

William Trumbull, Ph.D. (U.N.C.). Public finance, Law and economics, Economics of crime, Applied microeconomics.

Assistant Professors

Stratford M. Douglas, Ph.D. (U.N.C.). Econometrics, Industrial organization, Corporate finance.

Govind Hariharan, Ph.D. (SUNY-Buffalo). Public finance, Economic growth.

Roger C. Tutterow, Ph.D. (Georgia St. U.). Microeconomic theory, Econometrics, Financial economics, Public economics.

Howard J. Wall, Ph.D. (SUNY-Buffalo). International economics, Microeconomic theory.

Royce J. Watts, M.S. (WVU). Statistics.

English Language and Literature

Degree: Bachelor of Arts
Rudolph P. Almasy, Chairperson
Elizabeth Madison, Assistant Chairperson
Margaret Racin, Department Adviser

Nature of Program

The department offers courses for students who intend to pursue a graduate degree in English; attain secondary certification to teach English or language arts; concentrate in literature and language as preparation for entrance into professional schools; or concentrate in writing.

Because English majors have varying interests in literature, language, and writing, they are strongly urged to consult the department's undergraduate adviser to plan their course work. To aid majors in their deliberations, the department has prepared a statement explaining special features of its curriculum, informing students of the opportunity to double major, and suggesting courses for students interested in literary history, genre studies, language studies, creative writing, scientific/technical writing, Appalachian studies, women's studies, and graduate study in English.

Admissions Requirements

Students may apply for admission to the degree program when they have completed 58 hours with a 2.0 grade-point average and have a cumulative average of at least 2.0 for courses in English. Majors must maintain at least a 2.0 cumulative average for English courses at WVU in order to retain their status as an English major.

Degree Requirements

An English major requires a minimum of 33 hours in literature, language, and writing, exclusive of English 1 and 2. A maximum of 42 hours in English, exclusive of English 1 and 2, may be included within the 128 hours required for graduation.

Required courses include: English 21, 22, 24, and 25; one course from English 111, 113, 210, 211; English 150 or 250; (students must earn a grade of C or better in all required English courses plus English 1 and 2);at least 15 additional hours of courses offered by the Department of English in literature, language, or writing; at least nine hours of the student's total course work must be at the 200 level.

Minor in English

Any student admitted to a degree program within the College of Arts and Sciences may take a minor in English. Such a minor consists of any 15 hours beyond English 1 and 2 with a minimum of nine hours at the upper-division level. Students are advised to design their own English minor to complement the work in their major. Only courses in which the student earns a grade of C or better can be applied to the English minor.

Publications

Victorian Poetry, a critical journal of Victorian literature, is edited by the department of English. The journal was established at WVU in 1963 and has become internationally known, with subscribers in 27 countries.

Calliope, a publication of WVU student writing, is sponsored by the Department of English and the English Honorary and Club.

West Virginia Philological Papers, a publication which prints a selection of papers read at the Colloquium on Modern Literature and Film, is supported by the Department of English.

The Pater Newsletter, devoted to scholarship in late 19th century British literature, is also supported by the English Department.

Faculty

Professors

Sophia B. Blaydes, Ph.D. (Ind. U.). 17th and 18th century literature, Poetry, Drama.
Philip Bordinat, Ph.D. (U. Birmingham, Eng.). *Emeritus.*
Patrick Conner, Ph.D. (U. Md.). Old and Middle English literature, Paleography.
Lloyd M. Davis, M.A. (Vanderbilt U.). American literature, Contemporary American poetry.
Ruel E. Foster, Ph.D. (Vanderbilt U.). *Emeritus.*
William W. French, Ph.D. (U. Pitt.). Shakespeare and Renaissance drama and literature, Contemporary theatre, Modern drama.
Elaine K. Ginsberg, Ph.D. (U. Okla.). Early American literature, Contemporary women writers, Virginia Woolf.
John L. Hicks, Jr., M.A. (Ind. U.). *Emeritus.*
Martha C. Howard, M.A. (U. Mich.). *Emerita.*
John H. Johnston, Ph.D. (U. Wisc.). *Emeritus* .
Thomas Miles, Ph.D. (SUNY). Medieval and Renaissance studies, Rhetoric, Psychoanalytical and mythological criticism, Scientific and technical writing.
Patrick O'Donnell, Ph.D. (U. Calif.-Davis). Eberly Family Distinguished Professor of American Literature. Contemporary American fiction, Critical theory, Modern American literature, History and theory of the novel.
Virgil L. Peterson, Ph.D. (UCLA). Writing, Biography, Peace studies.
John Racin, Jr., Ph.D. (Ohio St. U.). Shakespeare, English Renaissance poetry, prose, and drama, Chekov.
Frank Scafella, Jr., Ph.D. (U. Chicago). American novel, American Romantics, Literature and religion, Science fiction/fantasy.
John F. Stasny, M.A. (Marquette U.) *Emeritus.*
Judith G. Stitzel, Ph.D. (U. Minn.). Director, Center for Women's Studies. Women's studies, Feminist pedagogy.

Associate Professors

Timothy D. Adams, Ph.D. (Emory U.). American literature, Southern literature, Autobiography.
Dennis Allen, Ph.D. (U. Minn.). Critical theory, Prose fiction.
Rudolph P. Almasy, Ph.D. (U. Minn.). Chair. Renaissance and Reformation studies, Composition.
Arthur C. Buck, Ph.D. (U. Ark.). Jean Giraudoux, Comparative modern and contemporary drama, Comparative romanticism, Chinese and Japanese literature in translation.
Robert W. Clarke, Ph.D. (U. Wisc.). British romanticism, 19th century novel.
Oreta H. Dawson, M.A. (WVU). *Emerita.*
Richard B. Eaton, Ph.D. (U.N.C.). 19th and 20th century American literature, Eugene O'Neill.
Anna Shannon Elfenbein, Ph.D. (U. Nebr.). American literature, Women's studies, Southern literature, Black fiction, Popular culture.
William P. Fitzpatrick, Ph.D. (U. Md.). 20th century British novel, Short story, Myth and literature.
Anita Gandolfo, Ph.D. (CUNY). Modern literature, Composition pedagogy, Editing original material.
Avery F. Gaskins, Ph.D. (Ind. U.). Romantic literature, Wordsworth.
W. Michael Grant, Ph.D. (Brown U.). Medieval literature.
Ellesa C. High, Ph.D. (Ohio U.). Appalachian literature, 20th century literature, Creative writing.
Russell C. MacDonald, Ph.D. (U. Penn). *Emeritus.*

Byron C. Nelson, Ph.D. (U. Wisc.). 17th century literature, Literature and music.
Kevin Oderman, Ph.D. (U. Cal.—Santa Barbara). Pound, H.D., Williams and their heirs, Continental moderns, Literary essay.
Dorothy Sedley, M.A. (Sonoma St. C.). Linguistics, Grammar, Technical writing.
Aileen K. Shafer, M.A. (WVU). American literature, Business writing.
Cheryl Torsney, Ph.D. (U. Fla.). American literature, Women's writing, Literary theory.
Barry Ward, Ph.D. (Ohio St. U.). Folklore, Medieval literature, American studies.
Hayden Ward, Ph.D. (Columbia U.). Victorian literature, Walter Pater.

Assistant Professors
Edna M. Dillon, M.A. (WVU). Writing process.
Nicholas G. Ehle, Jr., M.A. (WVU). American literature.
Nicholas G. Evans, Ed.D. (WVU). Assistant Dean for Undergraduate Education; Composition and language, British literature, Higher education law.
John Flynn, D.A. (Carnegie-Mellon U.). Creative writing, Poetry.
Winston Fuller, M.A. (U. Colo.). Modern and contemporary poetry, Poetics.
Betty Jo Hypes, M.A. (WVU). American literature.
Iris M. Jennings, M.A. (WVU). American literature, Business writing.
John Lamb, Ph.D. (NYU). Victorian literature, 19th century historiography.
Terry Lucas, M.A. (WVU). Short fiction, Composition.
Elizabeth Madison, Ph.D. (Ind. U.). Comparative literature, Modern fiction.
Charles Martin, Ph.D. (Yale U.). Black writing of the Americas, African writing in English, French, and Portuguese.
Margaret Racin, M.A. (WVU). English education, Feminist criticism, Composition.
Kathleen G. Rousseau, M.A. (WVU). American Nobel Laureates, The Brontes, Emily Dickinson.
Susan Shaw Sailer, Ph.D. (U. Wash.). Modern British literature, Irish literary renaissance, Literary theory, Epics.
Timothy Sweet, Ph.D. (U. Minn.). Early American literature, 19th century American literature.
Susan Thomas, Ph.D. (U. Penn.). Linguistics, History and structure of English, Technical and scientific writing, Nonfiction prose styles.

Foreign Languages

Degree: Bachelor of Arts
Robert J. Elkins, Chairperson
Axel Claesges, Associate Chairperson

Majors Within the Degree Program:

French	German	Russian	Spanish
Classics	Linguistics/Teaching English as a Second Language		

Nature of Program

Coursework is offered in foreign literatures and cultures, linguistics,and foreign languages, including Arabic, Chinese, French, German,Italian, Japanese, Latin, Portuguese, Russian, and Spanish. In the 1991-93 academic years, Hausa and Polish are not apt to be taught. Literature courses taught in English are designated FLIT (Foreign Literature in Translation) courses. Other areas of instruction are EFL (English As a Foreign Language), linguistics, language teaching methods, and bibliography and research.

Depending upon the major in foreign languages, students are expected to be able to communicate, through reading, writing, speaking, and listening, in one or more foreign languages. Students must be conversant in the cultures and literatures related to those languages and have a general understanding of how human languages

operate. The Department of Foreign Languages cooperates closely with other departments to offer interdepartmental majors.

Honor Societies

The department sponsors student honor societies in French and Spanish and supports language clubs in French, German, Japanese, Russian, and Spanish.

Special Units

In the department, the WVU Intensive English Program offers a program of instruction in English as a second language for students seeking admission to the University. Practical experience for majors in teaching English as a second language is available on a limited basis in conjunction with this program.

Career Goals for Graduates

In addition to foreign language teaching, students may use foreign language study to enhance their primary degree, adding an international dimension to business, economics, political science, journalism, or law.

Admission Requirements

The Department of Foreign Languages uses the requirements of the University. To major in foreign languages, students must have satisfactorily completed elementary and intermediate course sequences in a given language and completed 58 credit hours with an overall 2.0 grade-point average.

Graduation Requirements

A foreign language major must complete a minimum of 27 hours of upper-division work offered by the Department of Foreign Languages. Three of the hours must be Linguistics 111. Language 221 cannot be counted for any major except linguistics/TESL. Twelve of the hours must be in one of the options listed in the "Options" section which follows.

All students majoring in foreign languages must present a secondary concentration of 12 upper-division hours from within the department or from outside the department or a recognized minor. An outside concentration must be approved by the adviser. The departmental concentration may not duplicate courses from the major. All 12 hours in the concentration must have the same division prefix (i.e., Ger., Span., Lingu., Hist., etc.) Students wishing to teach should inquire about courses to fulfill certification requirements early.

In addition to the courses required for the foreign language major, students should elect relevant courses in history, political science, humanities, English, journalism, geography, sociology and anthropology, and/or business and economics. Students electing the joint foreign language/economics program should inform the Chairperson of Foreign Languages at the earliest opportunity in order to enroll in the proper economics courses.

Students with majors other than foreign languages who are interested in a second major in foreign languages should request information from the chairperson of the Department of Foreign Languages. No special core or GPA requirements are necessary for graduation beyond those of the University. Students are urged to contact the Arts and Sciences Advising Office at least a semester in advance of their graduation.

Areas of Emphasis/Options

In addition to fulfilling the degree requirements already listed, a language major must select one of the following degree options and complete the courses listed as part of the 27 hour, upper-division requirement:

French, German, Russian, Spanish: 103, 104, 109, 110, and three additional upper-division courses; all courses must have the same prefix as the option.

Linguistics/TESL: Lingu. 202, 283, 284, plus one upper-division linguistics course and two upper-division language courses approved by the advisor.
FLIT: Four upper-division FLIT courses and two upper-division language courses approved by the advisor.

Students electing the French, German, Spanish, Russian, classics, or linguistics/ TESL options may not use FLIT courses to fulfill the major requirements but may use them for the minor requirement.

Special Opportunities
Programs Abroad

The Department of Foreign Languages regularly offers language courses abroad. Courses in German have been offered in Germany and Austria during the summer, in Spanish in Spain, Colombia, and Mexico during the summer, in France during the fall, spring, and summer, and in Canada in the summer. Students participating in a summer program normally register for six to fifteen credit hours. Students participating in a fall or spring semester abroad enroll for 15-18 credit hours.

Language Residence Hall

Students who have successfully completed the elementary sequence of French or Spanish have the opportunity to live in the Foreign Language Residence Hall Program. The program allows students to live on specially-designated floors of a University residence hall where all communication is carried on in the target language, and where special foreign language programs and events are offered on a regular basis. Satellite hook-ups for live foreign language broadcasts are a special feature of the program. Credit is available for participants. For details, contact the Department of Foreign Languages.

Dual Degrees In Business and Foreign Language

The coordinated dual degrees in business and foreign languages provide global opportunities to students seeking both a Bachelor of Arts with a major in foreign languages and a Bachelor of Science in Business Administration. For details, contact the Department of Foreign Languages.

Minor

Students in the College of Arts and Sciences may complete an academic minor in foreign languages. The minor consists of 15 hours of coursework and is available in seven options (classics, foreign literature in translation, French, German, linguistics, Russian, and Spanish.) Students must achieve at least a 2.0 grade-point average in courses for the minor.

Requirements for a minor in French, German, Russian and Spanish include 103 and 104 or 109 and 110 and nine additional upper division hours in the same language; Lingu. 111 may be counted among the nine hours.

The linguistics minor requires Linguistics 111, 202, 283, and six additional approved upper division hours in foriegn languages.

The classics minor requires nine upper division hours in classics (six in Class. 109 and 110) and six additional approved upper division hours in foriegn languages.
The foreign literature in translation minor requires 15 upper division hours in FLIT, including courses in at least two different national literatures.
NOTE: These courses do not count toward the minor: any 191-level teaching or language dorm practicum, EFL 191, and Lang. 221. FLIT courses count toward the minor in foreign literature in translation.

Additional Points of Information

1.Foreign language courses are divided into elementary, intermediate, and

advanced levels. The elementary level, courses 1 and 2, provides beginning work in understanding, speaking, reading, and writing the languages, with emphasis on audio-lingual procedures. The vocabulary is limited to words of high frequency. Intermediate level, courses 3 and 4, continues training in the four basic skills, with greater emphasis on reading. The vocabulary is greatly extended, especially the passive or recognition vocabulary. In courses 103, 104, 109, 110, the four basic skills are further developed. All classroom questions and discussions are in the foreign language. The work is based on reading assignments followed by classroom discussions, oral drills, and written exercises.

2. In French, German, and Spanish, courses numbered 23 and 24 provide two semesters of work to develop reading knowledge. Courses numbered 33 and 34 are taught in the target language. The major difference between them and those numbered 3 and 4 is in the choice of materials. Courses 3 and 4 use literary materials as a basis for discussion whereas courses 33 and 34 use cultural materials. Students who elect courses 33 and 34 may then continue in the normal 103-110 sequence. Students can receive credit for only one of the courses 1 or 21; 2 or 22; 3, 23, or 33; 4, 24, or 34 in the same language.

3. Courses numbered 10 are intensive and equal to courses 1 and 2. Students may receive credit for either course 1 and 2 or 10 but not for both. Courses numbered 11 are the intensive equivalent of courses 3 and 4. Students may receive credit for courses 3 and 4 or 11 but not both.

4. Students who present two or more units of high school credit in a foreign language may satisfy the foreign language requirement of the College of Arts and Sciences by taking courses 3 and 4, or other approved courses on the same or higher level, in that language.

5. The Department of Foreign Languages offers a credit by examination testing program for elementary and intermediate classes in Classics, French, German, Italian, Russian, and Spanish only. Information about the program is available in the Department of Foreign Languages.

Faculty

Professors

Laszlo A. Borsay, Ph.D. (U. Pitt). Classics. *Emeritus.*

Robert J. Elkins, Ph.D. (U. Kans.). Chair. German. Language methodology, German radio plays, English as a second language.

Francisco Herrera, M.A. (WVU). Spanish. *Emeritus.*

Victor J. Lemke, Ph.D. (U. Wisc.). German. *Emeritus.*

Kathleen McNerney, Ph.D. (U. N.M.). Spanish. Catalan language and literature, Spanish literature and culture.

Joseph A. Murphy, Ph.D. (Ohio St. U.). French. English as a second language, Foreign language education.

Jean-Pierre M. Ponchie, Ph.D. (Mich. St. U.). French. Contemporary French civilization, 17th and 18th century French literature.

Joseph J. Prentiss, Ph.D. (U. Pitt). Classics. Greek and Latin literature, Classical mythology.

Armand E. Singer, Ph.D. (Duke U.). Spanish. *Emeritus.*

Janice Spleth, Ph.D. (Rice U.). French. Franchophone literature and culture, 19th century French drama.

Robert Stilwell, Ph.D. (U. Tex.). German. *Emeritus.*

Harley U. Taylor, Jr., Ph.D. (Ind. U.). German. *Emeritus.*

Associate Professors

Michel J. Beauchemin, M.A. (Brown U.). French. 17th century French literature.

Marilyn Bendena, Ph.D. (Wayne St. U.). French, Russian. Russian literature/culture, Contemporary French novel.

Axel Claesges, Ph.D. (Vanderbilt U.). German. German cultural and intellectual history, 19th century German literature, Commercial German.
Eleanor R. Gibbard, M.A. (WVU). French. *Emerita.*
Pablo Gonzalez, Ph.D. (U. Madrid). Spanish. Spanish-American literature, Commercial Spanish.
Luis Harss, M.A. (Stanford U.). Spanish. Spanish-American literature and culture.
Lois Hinckley, Ph.D. (U. N.C.). Classics. Roman literature/civilization, Greek literature/civilization.
Michael E. Reider, Ph.D. (U. Iowa). Spanish, Linguistics. Syntax and phonology, Psycholinguistics.
Joseph F. Renahan, M.S. (Yeshiva U.). Spanish. French and Spanish philology, Spanish Golden Age drama.
Jurgen Schlunk, Ph.D. (U. Marburg). German. 18th century German literature, 19th and 20th century German drama.

Assistant Professors
Jeffrey Bruner, Ph.D. (Rutgers U.). Spanish. Spanish golden age, Contemporary Spanish literature.
Kuan-Yi Rose Chang, Ph.D. (Purdue U.). TESL/Spanish. Language teaching method ology, Computer-assisted language learning.
Sandra Dixon, Ph.D. (Brown U.). Spanish. Portuguese literature, Spanish- American literature.
Ahmed Fakri, Ph.D. (U. Mich.). TESL. Second language acquisition, Applied linguistics, Discourse analysis.
Daniel Ferreras, Ph.D. (Mich. St. U.). Comparative romance literature, French/Spanish 19th and 20th century novel, Theory of the fantastic.
Donald T. Huffman, M.A. (Ind. U.). German. English as a second language, Computer assisted instruction.
Michael Lastinger, Ph.D. (U. Ga.). French. 19th century French literature, Critical theory.
Valerie Lastinger, Ph.D. (U. Ga.). French. 18th century French literature, French women writers.
Chantal Marechal, Ph.D. (U. Mich.). French. Medieval French literature, Commercial French.
Johann Seynnaeve, Ph.D. (Cornell U.). Linguistics. Sociolinguistics, Phonology, History of linguistics.

Lecturer
Vicente Andrev, M.A. (WVU). Spanish. Pedagogy.
Takeko Ruf, A.B. (Kinjo Wom. C.). Japanese. Japanese teaching methodology, Japanese culture.
Jo Anne Zoller Wagner, M.A. (U. Ill. Chicago). English as a Second Language, Language teaching methodology, Linguistics.

Geology and Geography

Degrees
Geography major: Bachelor of Arts
Geology major: Bachelor of Arts, Bachelor of Science
Alan C. Donaldson, Chairperson
Robert C. Shumaker, Associate Chairperson
Robert Hanham, Assistant Chairperson

Geology

Bachelor of Science

The Bachelor of Science degree is designed for students who want to qualify for professional positions in industry and government services, as well as those who plan to do graduate work in geology. Qualified students are encouraged to seek a graduate degree, although placement in positions emphasizing environmental, energy, engineering, and economic geology are probable as BS graduates. A total of 134 hours is required. Electives must be chosen to meet the basic requirements of the College of Arts and Sciences and fulfill the University Liberal Studies Program.

Candidates for the Bachelor of Science are required to take a total of 40 hours of geology courses. Students are urged to elect some supporting courses in such fields as mining or petroleum engineering, biology, geography, soil mechanics, pedology, and computer science, depending on their major field of geologic studies. Students planning to attend graduate school or seek employment in the oil industry should complete a full year of calculus. Electives should be chosen with the adviser's consent.

Instructional facilities and equipment include the laboratories associated with mineralogy, petrology, geochemistry, sedimentology, paleontology, hydrogeology, geophysics, geomorphology, mineral and fuel resources, and structural geology. Field studies are stressed with geologic mapping at Camp Wood in Greenbrier County; carbonate sediments and their depositional environments in the Florida Keys; sedimentation and coastal processes on the eastern shore of Virginia; pollution measurements in nearby streams and lakes; field trips to glaciated areas; examinations of processes acting on earth's surface in West Virginia; and structural and stratigraphic analyses of the Appalachian basin and orogenic belt. Subsurface logs and samples are available for study in the West Virginia Geological and Economic Survey and the nearby Morgantown Energy Technology Center of the U.S. Department of Energy.

Bachelor of Arts, Geology Major

The program leading to the Bachelor of Arts with a major in geology is designed for students who want to go into careers that require a good background in the basic principles of geology. Areas such as environmental science, planning, or other earth-related sciences, secondary school teaching, or earth science laboratory technical work may be pursued by proper choice of electives.

Admission Requirements

Admission to the programs requires at least a cumulative average of 2.25 and an average of at least 2.25 in lower-division required geology courses. To continue in the programs, an average of at least 2.0 must be maintained in required chemistry, physics, mathematics, and statistics courses. At least a 2.0 average must also be maintained in required upper-division geology courses.

Degree Requirements—B.S.

Required courses for a B.S. with a major in geology: Geol. 1, 2, 3, 4, 152, 184, 185, 221, 231, 261, 266, and four hours of upper-division geology electives; Chem. 15 and 16; Phys. 1 and 2 or 11 and 12; Math. 3, 4, 15, and 16 or Stat. 212 or 231; Stat. 101.

Recommended electives: Geol. 127, 228, 235, 251, 270, 272, 274; Geog. 105, 107; C.S. 1; C.E. 1; additional biology, chemistry, physics, or mathematics courses. Geol. 6 and 7 are not acceptable electives.

Degree Requirements—B.A.

Required courses: Geol. 1, 2, 3, 4, 127, 152, 184, 221 or 222, 231 or 235, 261; Chem. 15 and 16; Phys. 1 and 2; Math. 3 and 4; advanced science elective other than geology.

Recommended electives: See those listed under "Bachelor of Science, Course requirements.

Minor in Geology

Any student admitted to a major program in the College of Arts and Sciences may complete a minor in geology. Recognizing that the science of geology is a composite of many scientific disciplines applied to the study of the earth, the College requires students who seek a minor to complete ten hours chosen from among adjuncts in math, science, computer science, or statistics. Additionally, one upper division course must be a lab course. NOTE: At this time, only students enrolled in the College of Arts and Sciences may complete a formal academic minor in geology. Anyone interested in a geology minor, however, is urged to contact the department.

Requirements for the Minor: Geology 1, 2, 3, and 4; nine hours selected from Geology 127, 152, 221, 222, 290, 184, 185, 213, 272, 273, 290; ten hours selected from Math 3, 4, 14, 15, 16; Chemistry 15, 16; Physics 1, 2, 11, 12; Biology 1, 2, 3, 4; Computer Science 1, 2; Statistics 101, 213.

Students must achieve a grade-point average of at least 2.0 in all geology courses. Courses graded P/F may not be applied toward the geology minor.

Geography

Nature of Program

The undergraduate major in geography provides students with the knowledge and skills needed to analyze the variability in human activity which exists among places, regions, and countries. This knowledge allows the geographer, for example, to explain why some places are less developed than others, to suggest ways in which the development of places can be planned, and to examine the relationship what development has with the natural environment and a place's resources.

Graduates are qualified for a number of careers in both the private and public sectors. In industry, graduates are, for example, hired as business location researchers, environmental impact consultants, market analysts, cartographers, and geographic information systems analysts. In government, graduates are hired as local urban planners, regional and state economic development specialists, environmental and resource development analysts, land use planners, international development agency advisors, teachers and trainers, researchers, cartographers, and geographic information systems analysts. Some graduates may also use their training to pursue careers as environmental or community activists in non-profit organizations. Finally, many graduates go to graduate school to obtain further training, most commonly in geography or planning.

A minimum of 33 hours of geography courses are needed to graduate with a major in geography. Of these, there are a number of required introductory courses which are listed below. After a student has taken these introductory courses, he or she can receive more specialized training in any one of the geography program's four options: planning and regional development; geographic information systems and automated cartography; natural resources, environment, and development; and international area studies. Courses in these options are designed to provide students with the kind of advanced training needed to enter the types of careers listed in the

previous paragraph. In exceptional cases and with the approval of the geography faculty, a student may design a program that combines elements of the four specialty options. Such a program will be arranged with the assistance of the student's advisor. The specialty options are described below in detail. Following a brief description of each option, a number of recommended courses are listed that provide the appropriate training for each and a number of courses from other programs at WVU which are recommended as supplements to the geography courses.

Degree Requirements

Required courses for all options (25 credit hours): Geog. 2, 7, 8, 99, 105, 109, 110, 140, and 151 or 261.

Options

Planning and Regional Development : The planning and regional development option prepares students to participate in the social processes that influence contem porary urban and regional development. Students will be exposed to issues and problems of planning, including topics and questions such as equity versus efficiency; planning from above or below; community development and grass roots planning; regions of growth versus regions of decline; third world planning; urban design; land-use planning; neighborhood development and urban revitalization; race, gender, and suburban growth; rural development planning; and policy formation. The training provided in this track will equip students with a background for careers or advanced study in economic development, urban or regional planning, industrial development, community planning, and environmental design. A planning internship is included within the program and most courses have a practical orientation. Students following this track can choose to focus on one of three sub-areas: urban, rural, or regional development planning. Alternatively, students may construct their own program which includes courses from each sub-area.

Urban recommended courses: Geography 225, 295, and one regional course from either 141, 144, or 145. Other recommended courses are Economics 257, Political Science 120, Sociology 131 and 222.

Rural recommended courses: Geography 205, 221, 230, 295, and one regional course from either 143, 144, or 145; other suggested courses are Economics 200, Political Science 120, Sociology 223.

Regional development recommended courses: Geography 209, 211, 295, and two regional courses from 141, 143, 144, or 145; other suggested courses are Economics 200, Political Science 120, Sociology 223.

Spatial Analysis: Geographic Information Systems and Automated Cartography Contemporary theory and practice of computerized cartography and geographic information systems (GIS) are emphasized in this option. Specializing in the art and science of making maps and spatial data analysis, the option responds to the need for fresh approaches to decision making in a variety of career settings. Geography offers a unique spatial perspective on the analysis of information. The analysis option provides knowledge of geographical distributions and patterns, and data capture from field, aerial photographic, and remotely sensed image sources. The student may further specialize in statistical and computer-oriented geographical analysis and technical and managerial issues in geographic information systems. Internships are available with local planning agencies and within University research units to apply geographical and map analysis to practical and developmental problems.

Recommended courses: Geog. 151, 200, 251, and 252. Other suggested courses: Geog. 115, 150, 209, 220, 225, 295, Geol. 7, 221; Math 3, 4, 15, 16; C.S. 1, 2, 5; C.E. 5; Stat. 101, 201, 212, 221, 231; Engl. 208; For.226; Econ. 54, 55, 255, 257; Ag.Ec. 200, 211; Astr. 106; Art 121, 123; Phys. 8; Journ. 1, 50, 120; I.E. 250.

Natural Resources, Environment, and Development : This option emphasizes the interaction between natural resources, the physical environment, and economic development in first and third world regions. It provides training for students interested

in problems concerning the conservation of natural resources, the environmental impact of economic development, and strategies for sustainable resource utilization. Geographical information systems, remote sensing, and cartographic training are also available for analyzing environmental problems resulting from the exploitation and management of energy, mineral, land, and water resources. Theoretical training on resource issues is also provided.

Recommended courses:Geog. 107, 127, 200, 205, 211, 221, 230; other suggested courses are Geog. 205, 225, 251, 252, 290, 295; Geol. 1, 2, 3, 4; Biol. 254; Chem.11, 12; C.E. 5, 252; Engl. 208; For. 140, 226; Math 4; MER 97; Pol.S. 236, 238; Stat. 101; C.S. 1, 2, or 5.

International Area Studies : The international area studies option allows the student to specialize in one or more regions of the world and gain a basic background in international economic, political, and cultural relationships. The program not only deals with specific regional problems but also with the global issues of colonialism, nationalism, development, international cooperation and trade, multi-national corporations, and the competition and relationships between capitalist, socialist, and non-aligned nations.

Recommended courses: Geog. 202, 210, 215, 295; six hours from Geog. 141, 143, 144, 145; Econ. 54, 55, 110; Pol.S. 3, 160. Other suggested courses are Econ. 213, 250; Engl. 208; Hist. 4, 5, 6, 180, 264; Pol.S. 150, 261, 263, 264; Soc.&A. 51, 156; Tech.Ed. 280; MDS 90.

Individualized Program of Study

In exceptional cases and with the approval of the geography faculty, a student may design an individualized program of study consisting of a minimum of 33 hours of geography. The program shall be arranged in conjunction with the student's advisor. It shall comprise no more than six hours of Geog. 219 and 295.

Geography Minor

Any student admitted to a degree program in the College of Arts and Sciences may complete a minor in geography. In order to earn a minor, students must complete one of the following options:

A. Planning and regional development required courses: Geog. 7, 8*, 109, 110, and three additional hours from Geog. 209, 211, 225, or 230.

B.Spatial analysis: cartography and geographic information systems required courses: Geog. 7, 8*, and nine hours from Geog. 151, 200, 251, 252, 261, or 262.

C. Physical environment and resources required courses: Geog. 7, 8*, 105, and six hours from Geog. 107, 127, 205, 221, or 290.

D. International area studies required courses: Geog. 7, 8*, and nine hours from Geog. 141, 143, 144, 145, 202, or 210.

E. General required courses: Geog. 7, 8*, and nine additional hours of geography, comprising no more than three hours of Geog. 219 and 295.

Students must achieve at least a GPA of 2.0 in the 15 hours taken for the geography minor.

Honors Program

Qualified students in geography are encouraged to participate in the department's Honors Program which begins either the second semester of the junior year or the first semester of the senior year and culminates in a senior thesis. Entry requires a 3.3 overall average. (See the department's Honors Coordinator.)

Faculty

Professors

Mary C. Behling, M.S. (U. OH). Adjunct. Computer statistics.

Robert E. Behling, Ph.D. (Ohio St. U.). Geomorphology.

*Geog. 1 or 2 also fulfills this requirement.

C. Blaine Cecil, Ph.D. (WVU). Adjunct. Coal geochemistry.
Alan C. Donaldson, Ph.D. (Penn St. U.). Chair. Sedimentation, Stratigraphy.
William H. Gillespie, M.S. (WVU). Adjunct. Paleobotany. Director, Forestry Program for WV.
David Harrison, J.D. (Harvard Law). Adjunct. Law.
Milton T. Heald, Ph.D. (Harvard U.). *Emeritus.*
Andrew Isserman, Ph.D. (U. Penn.). Regional research.
Peter Lessing, Ph.D. (Syracuse U.). Adjunct. Environmental geology. WVGS.
John C. Ludlum, Ph.D. (Cornell U.). *Emeritus.*
Kenneth C. Martis, Ph.D. (U. Mich.). Political, historical geography.
William K. Overbey, B.S. (WVU)—Adjunct. Economic petroleum geology.
Henry W. Rauch, Ph.D. (Penn St. U.). Hydrogeology, Geochemistry.
John J. Renton, Ph.D. (WVU). Geochemistry.
Robert C. Shumaker, Ph.D. (Cornell U.). Petroleum geology, Basin structures. Richard A. Smosna, Ph.D. (U. Ill.). Carbonate sedimentation.

Associate Professors
Frank J. Calzonetti, Ph.D. (U. Okla.). Associate Dean for Research and Graduate Studies; Energy, Industrial development.
Don W. Duckson, Jr., Ph.D. (U. Colo.). Adjunct. Professor of Geography, Frostburg St. U.
Gregory A. Elmes, Ph.D. (Penn St. U.). Geographic information systems.
Robert Q. Hanham, Ph.D. (Ohio St. U.). Regional development.
Trevor Harris, Ph.D. (Hull U.). Geographic information systems
Michael E. Hohn, Ph.D. (Ind. U.). Adjunct. Computer geology. WVGS.
Thomas W. Kammer, Ph.D. (Ind. U.). Paleontology.
J. Steven Kite, Ph.D. (U. Wisc.). Geomorphology.
Helen Lang, Ph.D. (U.Ore.). Mineralology, Petrology.
Dennis A. Poluga, M.S. (WVU). Adjunct. Regional planning, City Manager.
Carl Smith, M.S. (Ind. U.). Adjunct. Coal geology. WVGS.
Thomas Wilson, Ph.D. (WVU). Geophysics.

Assistant Professors
William C. Grady, M.S. (WVU). Adjunct. Coal petrology.
Mary Elizabeth Haas, Ph.D. (Ind. U.). Adjunct. Geographic education.
Ronald Harris, Ph.D. (V. College, London). Structural geology.
Hobart M. King, Ph.D. (WVU). Adjunct. Economic geology.
Patricia Miller, Ph.D. (U. Tx.). Hydrogeology.
Ann Oberhauser, Ph.D. (Clark U.). Industrial geography.
Lizbeth Pyle, Ph.D. (U. Minn.). Visiting. Rural/urban planning.
Gerald Thomas, PH.D. (U. Ky.). Third world development.
Jon Weems, M.S. (WVU). Adjunct. Weather, Climate, Recreation.
Daniel Weiner, Ph.D. (Clark U.). Regional development.

History

Degree: Bachelor of Arts
Ronald L. Lewis, Chairperson
Robert E. Blobaum, Associate Chairperson and Director of Graduate Studies

Program Objectives/Goals

The Department of History offers courses focusing on a variety of world regions and time periods. Degree requirements insure that majors obtain an acquaintance with the history of several such regions and periods and that they develop skills in research and writing. Majors and non-majors may qualify for membership in Phi Alpha Theta, the national history honorary.

Admissions and Degree Requirements

In their freshman and sophomore years those selecting a major in the department are classified as pre-history. They may be admitted to the major upon the completion of 58 hours with an overall grade-point average of at least 2.2. Majors should also have attained at least a 2.2 average in history courses. To graduate, majors must meet university and college requirements for the Bachelor of Arts degree. The department requires the following:

1. History majors must complete a total of 33 hours (including History 1 and 2, 52 and 53, and 290) of work in history, of which at least 21 hours are to be selected from upper-division courses. Majors should divide these 21 hours between American and international fields with at least one course from African, Asian or Latin American history.

2. History majors must complete a minor of at least 9-12 upper-divison hours in a related subject.

3. History majors must achieve a 2.2 (C) average for all courses attempted in the major subject.

Career Prospects

The Bachelor of Arts with a major in history is designed to prepare students for careers in teaching, business, and government and for graduate work in history, law, and related social sciences and humanities.

Faculty

Professors

Wesley M. Bagby, Ph.D. (Columbia U.). Recent United States, U.S.diplomatic.

John A. Caruso, Ph.D. (WVU). *Emeritus.*

Elizabeth Cometti, Ph.D. (U. Va.). *Emerita.*

William T. Doherty, Ph.D. (U. Mo.). *Emeritus.*

Emory L. Kemp, Ph.D. (U. Ill.). Director, Institute for the History of Technology and Industrial Archeology. History of technology, Industrial archeology, 19th century engineering.

Mortimer Levine, Ph.D. (U. Penn). *Emeritus.*

Ronald L. Lewis, Ph.D. (U. Akron). Chair. Modern United States, West Virginia/ Appalachia, Labor and social history.

Robert M. Maxon, Ph.D. (Syracuse U.). Africa, East Africa, Economic and imperial.

Edward M. Steel, Jr., Ph.D. (U. N. C.). *Emeritus.*

John C. Super, Ph.D. (UCLA). Latin America, Spain, Early Latin America, Biography, Food and agriculture.

Associate Professors

William S. Arnett, Ph.D. (Ohio St. U.). Ancient, Egyptology, Aging in ancient Middle East.

Robert E. Blobaum, Ph.D. (U. Nebr.). Russia, East Europe, Poland, 20th century political and social history.

Gregory A. Good, Ph.D. (U. Toronto). History of science and technology, History of science in 18th-20th century U.S. and Europe.

Jack L. Hammersmith, Ph.D. (U. Va.). Modern United States, East Asia, U.S. diplomatic, U.S.-Japanese relations.

Barbara J. Howe, Ph.D. (Temple U.). Modern United States, Public history, U.S. urban and women's history.

Elizabeth K. Hudson, Ph.D. (Ind. U.). Renaissance and Reformation, Education and religion.

John A. Maxwell, Ph.D. (WVU). Modern Europe, East and West Germany, Military history.

Stephen C. McCluskey, Ph.D. (U. Wisc.). Medieval, History of science, Astronomies of non-literate cultures.

W. Reynolds McLeod, Ph.D. (U. Md.). Great Britain, Celtic Europe (Scotland), Popular history, Newspaper history.
Dennis H. O'Brien, Ph.D. (U. Ill.). Early Modern Europe, France, Diplomatic history.
Sarah R. Smith, Ph.D. (Columbia U.). *Emerita.*

Assistant Professors
Elizabeth Fones-Wolf, Ph.D. (U.Mass.). 20th century U.S. social and economic history.
Wilbert L. Jenkins, Ph.D. (Mich. St.). United States, Afro- American.
Mary Lou Lustig, Ph.D. (Syracuse U.). Early United States Colonial, Revolution, Constitution.
John R. McKivigan, Ph.D. (Ohio St.). United States 19th Century Reform, Ethnic, Civil War/Reconstruction.

Program in the Humanities

No degree.
Virginia H. Klenk, Coordinator

Nature of Program

The study of the humanities consists of the study of mankind's effort to understand itself through history, literature, religion, philosophy, and fine arts. It also consists of our effort to comprehend the masterpieces of the past and present as we seek to deepen our understanding of ourselves and our culture: what we are, why we are, what our options for significant life are.

Faculty
Professor
Virginia H. Klenk, Ph.D. (U. Pitt), Coordinator, Philosophy.

Assistant Professors
Camille Caruso, Ph.D. (WVU). Visiting.
Janet Kemp, Ph.D. (WVU). Visiting.
Peter Laska, Ph.D. (U. Rochester). Visiting.

Adjunct Faculty
W. Michael Grant, Ph.D. (Brown U.). English.
Kathleen McNerney, Ph.D. (U. N.M.). Foreign Languages.
Thomas Miles, Ph.D. (SUNY). English.
Takeko Minami, A.B. (Kinjo Wom. C.). Foreign Languages.
Joseph F. Renahan, M.S. (Yeshiva U.). Foreign Languages.

Individualized Major Program

The individualized major provides the undergraduate student an opportunity to arrange an individually tailored program when the educational aims of the student fall between established departmental boundaries. Ideally, the proposal should be developed during the sophomore year since a student normally would be expected to embark on this program at the beginning of the junior year. A major typically involves only two academic departments—one of which must be in the College of Arts and Sciences—and the program should be planned so that the student attains academic depth at least matching the depth and rigor of a traditional departmental major. Students considering the individualized major are encouraged to approach the Assistant Dean for Undergraduate Education of the College of Arts and Sciences with program ideas or questions before submitting a formal proposal. Following the initial discussion, students are advised to seek counsel with individual faculty who may thereafter agree to become part of a faculty advisory committee. When initial discus-

sion and consultation are completed, students are encouraged to submit the formal proposal for acceptance into the program. The proposal is submitted first to the student's advisory committee, then to the Individualized Major Committee, and should include:

1. A definition of the area of concentration;
2. A statement of the objectives served by the program;
3. A listing of courses that will constitute the program;
4. A brief personal intellectual biography.

Additional information about the formal proposal is available at 206 Student Services Center.

International Studies

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Sophia Peterson, Coordinator
Rodger D. Yeager, Adviser Committee for Interdepartmental Major in International Studies

Nature of Program

The Bachelor of Arts interdepartmental major in international studies provides knowledge of global affairs, helps develop understanding and appreciation of other cultures and societies, and promotes informed analysis of world interdependence. It provides the basis for careers in many areas, e.g., international business and commerce, international administration and service, as well as government, law, research, education.

Admission Requirements

Admission to the degree program may be applied for upon the completion of 58 hours with a cumulative average of at least 2.0.

Degree Requirements

The international studies major consists of courses drawn from many departments and multidisciplinary study courses. The program comprises four parts:

1. Orientation to International Studies (one hour).

2. Introductory Core (15 hours). Majors are required to take Economics 54 (Microeconomics) and Economics 55 (Macroeconomics), and three more courses from the following: English 85; FLIT 13-18; Geography 1, 2, 7, 8; History 2, 4, 5, 6; Humanities 5; Multidisciplinary Studies 90; Political Science 3; Sociology and Anthropology 5, 51.

3. Advanced Core (15 hours). The advanced core provides students with a more thorough understanding of global institutions, practices, and processes. International studies majors are required to take five courses from the following:

Economics 110 *Comparative Economic Systems,*
Economics 250 *International Economics,*
Geography 202 *Political Geography,*
Geography 210 *Global Issues: Inequality and Interdependence,*
History 180 *World History Since 1500,*
Political Science 150 *Comparative Politics,*
Political Science160 *International Relations,*
Political Science 264 *American Foreign Relations.*

4. Area of Concentration (21 hours). Majors are required to select an area of concentration for specialization. This might be a world region (such as Africa and the Middle East, East Asia, Latin America, Eastern Europe, Western Europe), or a topical area such as Development Studies. No more than nine hours out of the required 21 may be taken in the same department. Students select from a variety

of courses in economics, foreign languages, geography, history, music, philosophy, political science, religious studies, sociology and anthropology, technology education, and women's studies.

Options: Internships and Study Abroad

Students are encouraged to take advantage of opportunities for internships and study abroad, which may be undertaken for academic credit with the approval of the International Studies Adviser. Through internships, students gain first-hand knowledge of government agencies or private and business organizations involved in world affairs. To experience another society and/or improve their foreign language competence, students may study abroad for a summer, a semester, or a year. Interested students should contact the International Studies Adviser in the Department of Political Science.

Faculty

Sophia Peterson, Ph.D. (UCLA), Coordinator, Professor of Political Science.
Kenneth C. Martis, Ph.D. (U. Mich.), Professor of Geography.
Joseph Renahan, M.S. (Yeshiva U.), Associate Professor of Foreign Languages.
Kenyon Stebbins, Ph.D. (Mich. St. U.), Assistant Professor of Sociology & Anthropology.
John C. Super, Ph.D. (UCLA), Professor of History.
William N. Trumbull, Ph.D. (UNC). Associate Professor of Economics
Rodger D. Yeager, Ph.D. (Syracuse U.), Professor of Political Science.

Liberal Arts Major

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Alan W. Jenks, Coordinator

Nature of Program

The acceptance of liberal arts graduates in teaching positions, into graduate and professional schools, and in government, commerce, and industry is growing. This recent upsurge in the popularity of the liberal arts graduate is based upon the recognition that the liberal arts degree prepares students to master new knowledge quickly and to integrate new data with old.

In order to foster skills in learning, in critical thinking, and in synthesizing, the liberal arts major requires students to gain a solid base in three areas: (a) the natural sciences and mathematics; (b) the social sciences, and (c) the arts and humanities. Majors are encouraged to pursue their learning in at least one subject to a sophisticated level. In this special area of concentration, students often approximate the course requirements of a second major. Majors must also complete all University and College of Arts and Sciences requirements.

Admission Requirements

Students may apply for admission to the liberal arts major after they complete 58 hours of course work satisfactorily. However, because the major is rigorous, only students with an above-average grade-point average are encouraged to apply. Students are admitted only after an interview with the coordinator and an evaluation of their academic progress. There is also a "pre-major" advising program supervised by the coordinator, for which freshmen and sophomores are eligible.

Degree Requirements

The liberal arts major requires 30 semester hours in each of the three basic areas of the liberal arts, plus 15 required semester hours in upper-division electives. Courses in the three basic areas must be distributed among subjects and between lower and upper division courses as follows:

Mathematics, computer science, or statistics: ten hours lower division; six hours upper division.
Physical or life sciences: Eight hours lower division; six hours upper-division.
Psychology, sociology, or anthropology: Six hours lower division; six hours upper-division.
History, political science, economics, or geography: 12 hours lower division; six hours upper division.
Art, music, theatre, or humanities: Three hours lower division; three hours upper-division.
English or communication studies: Three hours lower division.
English, communication studies, or foreign languages. Three hours upper-division.
Philosophy: Three hours lower division.
Philosophy or religious studies: Three hours upper division.

Additional courses in one of three areas in the humanities: six hours upper division.
Concentration in one area selected by the student: 15 hours upper division.

Library Science

Certification courses. No degree
Ruth M. Jackson, Chairperson

Nature of Program

The Department of Library Science has two emphases:

1. Courses are offered for all students to help them to make effective use of the library and to acquaint them with major sources of information in their particular fields;

2. Courses are available for students in elementary or secondary education who desire to qualify for certification as school library media specialists.

Library science provides a certification program.

Faculty

Associate Professors

Elizabeth F. Howard, Ph.D. (U. Pitt). Children's and young adults' literature, School librarianship, Reference, Cataloging and classification.
Victorine Louistall Monroe, M.A.L.S. (WVU). *Emerita.*
Harold B. Shill, Ph.D. (U. N.C.). Social science bibliography, Scholarly communication.

Assistant Professors

Theodore M. Judy, M.A.L.S. (WVU). Science bibliography.
Barbara Mertins, M.S.L.S. (Syracuse U.). Biblilographic instruction, Children's literature, School librarianship.

Mathematics

Degree: Bachelor of Arts
James H. Lightbourne III, Chairperson
Michael E. Mays, Associate Chairperson

Nature of Program

The Department of Mathematics provides a curriculum with programs for:

- An undergraduate major and minor in mathematics
- The pre-service elementary and secondary teacher
- Students interested in the applications of mathematics to the fields of computer science, statistics, engineering, physical, natural, and social science, and business and economics.
- The nonscience major, to explain the ideals and objectives of mathematics.

To enroll in a freshman-level mathematics course, a student must demonstrate a satisfactory understanding of background material, either in the prerequisite courses specified in this catalog or on the departmental placement examination. The placement examination is given during summer and fall orientation for freshman and transfer students and during the first week of each academic term. Students intending to take the placement examination at the beginning of a term should notify the Department of Mathematics on or before the day the test is given. Sign up sheets are in the departmental office.

WVU students may earn credit for some mathematics courses by examination. Examinations are given twice during each semester. Information concerning the regulations pertaining to credit by examination, courses listed, where and when to apply, and time and place of examinations may be obtained from the College of Arts and Sciences Office of Undergraduate Advising and Student Records.

Admission Requirements

To be admitted to the mathematics degree program, students must have at least a 2.0 overall grade-point average, must have completed Math. 15, Math. 16 and Math. 163 with at least a grade of C in each, and must have at least a 2.5 grade-point average in all of the required mathematics courses attempted prior to the request for admission. Math. 163 should be taken no later than the sophomore year, and if that course has not been completed with a grade of at least a C, a student may request admission on a provisional basis; the petition should be addressed to the Mathematics Academic Standards Committee.

Freshmen and sophomores who plan to major in mathematics and who also wish to meet the requirements for certification as secondary teachers of mathematics should plan their programs carefully in order to meet both sets of requirements within four academic years.

Degree Requirements

Mathematics majors must complete at least 40 hours of approved courses in the mathematical sciences. The required courses are: Math. 15, 16, 17, 18, 163, 141, 143, 220, 251, and three additional upper-division courses. These three courses may be selected from those numbered above 100 with the exclusion of Math. 120, 128, 131, 133, 226, 228, 231, 232, and 255 and with the inclusion of Stat. 201, or 261 and 262. These electives should be selected after consultation with the departmental adviser. Any substitutions in the list of required courses must be approved by the Mathematics Academic Standards Committee.

Successful completion of the major requires that the student receive at least a grade of C in each of the required mathematics courses presented for the degree, or a cumulative grade-point average of at least 2.25 in the courses numbered above 100. An upper-division mathematics course for which the grade is lower than C (including a grade of W) may be repeated only once. In this case, the second grade is used to compute the mathematics grade-point average and determine whether the 2.25 average is satisfied. A student with a valid medical or emergency reason for failing to receive an acceptable grade in two attempts may petition the Mathematics Academic Standards Committee for permission to register a third time.

Recommended Electives

Students should choose a computer science elective so that they can achieve programming proficiency. Programming skill is a prerequisite for Math. 220. Elective courses are selected in consultation with a departmental adviser; they should be based on interests and goals.

Minor in Mathematics

Students with majors in the College of Arts and Sciences who wish to pursue mathematics as a secondary field, either to support another major or to obtain deeper

insight into mathematics itself, can receive a minor by successful completion of 24-25 hours of approved courses.

Two tracks lead to the minor. The corresponding required courses are:
Track One: Math. 15, 16, 17, 163; at least one course chosen from among Math. 141, 143, 181, 251; two additional courses chosen from those numbered above 100 with the exclusion of Math. 120, 128, 131, 133, 226, 228, 231, 232, 269.
Track Two: Math. 15, 16, 17, 18; at least one course chosen from Math.213, 215, 220, 256; two additional courses chosen from those numbered above 100 with the exclusion of Math. 120, 128, 131, 133, 226, 228, 231, 232, 269.

The student's interests and goals will determine which plan is most appropriate as well as which electives best meet these interests and goals. The choice should be made in consultation with the student's major adviser; additional information may be obtained from one of the advisers in the Department of Mathematics.

Successful completion of the minor requires that the student receive a grade of at least a C in each of the mathematics courses presented for the minor, or a cumulative grade-point average of at least 2.25 in these courses.

Learning Center

The Department of Mathematics helps students in beginning mathematics courses through its Learning Center. The Learning Center has two components: the Study Hall and the Tape Center. The Study Hall is staffed by graduate students and undergraduate assistants and helps students enrolled in Math. 3, 4, 14, 28, 33, 34, and 131. The Tape Center is an area where students who are having difficulty with fundamental concepts or who have missed a lecture can listen to audiotapes with visual material to receive help. There is help available on tapes for Math. 3, 4, 14, 15, 16, 23, 28, 33, 34, 128, 131, and Stat. 101. Students may also obtain help here with pre-college algebra and geometry.

The Learning Center is open Monday through Friday during the day and some evenings. Specific times are posted at the beginning of each semester.

Faculty

Professors

Allen B. Cunningham, Ph.D. (WVU). *Emeritus.*
Hannibal A. Davis, Ph.D. (Cornell U.). *Emeritus.*
Harvey R. Diamond, Ph.D. (M.I.T.). Applied probability, Analysis
James C. Eaves, Ph.D. (U. N.C.). *Emeritus.*
Harry Gingold, D.Sc. (Israel Inst. Tech.). Differential equations, Perturbation methods, Numerical computational methods.
Jack T. Goodykoontz, Jr., Ph.D. (U. Ky.). General topology.
Henry W. Gould, M.A. (U. Va.). Combinatorics, Number theory, Special functions.
Anthony J.W. Hilton, Ph.D. (U. Reading). Eberly Family Distinguished Professor of Mathematics. Graph theory, Combinatorics.
Caulton L. Irwin, Ph.D. (Emory U.). Associate Director, Energy Research Center. Variational methods, Optimization, Applied mathematics.
Alonzo F. Johnson, Ed.D. (Okla. St. U.). Mathematics for teachers.
Jin Bai Kim, Ph.D. (VPI&SU). *Emeritus.*
Michael E. Mays, Ph.D. (Penn St. U.). Associate chair; Number theory.
Sam B. Nadler, Ph.D. (U. Ga.). Topology, Functional Analysis.
William H. Simons, Ph.D. (Carnegie-Mellon U.). Analysis, Differential equations, Applied mathematics.
Marvin L. Vest, Ph.D. (U. Mich.). *Emeritus.*

Associate Professors

Ian Christie, Ph.D. (Dundee U.). Numerical partial differential equations.
James E. Dowdy, Ph.D. (Okla. St. U.). Homological algebra.

Joy B. Easton, J.D. (WVU). *Emerita.*
Gary Ganser, Ph.D. (R.P.I.). Applied mathematics, Fluid mechanics.
Harumi Hattori, Ph.D. (R.P.I.). Differential equations, Continuum mechanics, Numerical analysis.
James H. Lightbourne, Ph.D. (N.C. St. U.). Chair. Differential equations.
Betty L. Miller, M.S. (WVU). Faculty Secretary. Calculus.
James E. Miller, Ph.D. (U. Ky.). Complex analysis.
James L. Moseley, Ph.D. (Purdue U.). Partial differential equations.
John W. Randolph, Ph.D. (U. Va.). Algebra, Finite groups.
Cun-Quan Zhang, Ph.D. (Simon Fraser U.). Combinatorics, Graph theory.

Assistant Professors
Krysztof Ciesielski, Ph.D. (Warsaw U.). Analysis, Topology
John Goldwasser, Ph.D. (U. Wisc-Madison). Combinatorics, Graph theory
Judith C. Hall, M.S. (Harvard U.). Pre-college algebra workshop.
Andrzej Karwowski, Ph.D. (Rutgers U.). Continuum mechanics.
Hong-Jian Lai, Ph.D. (Wayne St. U.). Combinatorics, Graph theory.
Dening Li, Ph.D. (Fudan U.). Partial differential equations.
Wilma J. Loudin, M.S. (WVU). Numerical methods, Computer applications.
Robert Mayes, Ph.D. (Kansas St. U.). Mathematics education.
Joseph Wilder, Ph.D. (R.P.I.). Applied mathematics.

Medieval and Renaissance Studies

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Elizabeth K. Hudson, Coordinator

Nature of Program

This interdepartmental major provides a broad liberal arts background while permitting the student to achieve a fuller understanding of the culture of this period in which many of the enduring social, political, religious, artistic, and literary traditions of Western civilization were developed.

Degree Requirements

By selecting a primary area of concentration of 15 upper-division hours and two secondary areas of nine upper-division hours each from the fields of English, foreign languages, history, or the arts, the student examines medieval and Renaissance culture from a variety of perspectives. Six hours of Latin must also be completed for this major. With careful selection of courses, this program may be combined with a traditional departmental major.

Music

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Cecil B. Wilson, Coordinator
314A Creative Arts Center

Nature of Program

The interdepartmental program in music, offered cooperatively with the College of Creative Arts, is intended for the student with an interest in music who wants a broad liberal arts education rather than professional preparation for a career as a performer, composer, or teacher. Students interested in professional careers in music should enter a Bachelor of Music program, described elsewhere in this catalog. Elective

courses to provide a basis for careers in music librarianship, computer science, music merchandising, arts management, or music criticism may be chosen.

Admission Requirements

Students wishing to enter this program must have the approval of the program adviser, and must meet audition requirements in a principal performance area, which can be piano, organ, voice, or band or orchestra instrument. Additional details may be found in the College of Creative Arts, Division of Music section of this catalog under the heading "Bachelor of Arts Degree."

Philosophy

Degree: Bachelor of Arts
Virginia H. Klenk, Chairperson

Nature of Program

The word "philosophy" originally meant love of knowledge; now it means the investigation of fundamental questions that have puzzled human beings for ages. Philosophy deals with such questions as: What is the ultimate nature of reality? What do we really know, and how do we know it? What is morally right, and how should we live? What is the nature of the human mind and the self? Is there a god, and how might human beings come to have knowledge of God? What is the ideal form of government? Typically, the philosophy student studies the history of basic views about knowledge, the world, and human nature. The student also develops logical skills to deal with specific philosophical issues relevant to life, such as current moral problems.

Philosophy is a discipline that raises questions about the foundations of other disciplines. Thus, within the general field of philosophy, there is the philosophy of science, the philosophy of religion, the philosophy of history, the philosophy of art, and so on. By its nature, philosophy tends to be interdisciplinary. Majors often find that it is helpful to combine the study of philosophy with a concentration of courses in another area.

Those who desire careers in the teaching of philosophy will need the Ph.D. degree. Being a philosophy major is also excellent preparation for advanced study in a number of other areas, including law and business. The philosophy major develops critical reasoning and writing skills and an ability to analyze problems from a variety of perspectives.

Degree Requirements

A major in philosophy requires 30 hours in philosophy, including 18 hours of upper-division work. The following courses are required: Philosophy 10, 20, 120, and 104 or 108, and 166 or 171. A grade of C or higher must be earned in courses required for the major, and majors must possess at least a C average in all philosophy courses in order to graduate. Majors planning to do graduate work in philosophy are strongly urged to take Philosophy 106.

A department advisor will help students select philosophy electives and courses from other departments suited to students' specific educational goals and interests.

Minor in Philosophy

Any student admitted to a degree program in the College of Arts and Sciences may complete a minor in philosophy. The minor is designed to acquaint students with a broad range of philosophical topics and skills, and to introduce them to the fundamental issues in philosophy. The minor consists of 15 hours in philosophy, with at least nine hours at the upper division level. Students must attain at least a 2.0 average in courses for the minor.

Pre-Law Track in Philosophy

Philosophy is an ideal major for pre-law students, since it combines an emphasis on logic, reasoning, and argumentation with a solid background in Western cultural traditions and ideas. Philosophy majors, in fact, score higher on the LSAT than students from any other discipline in the humanities. The pre-law track in philosophy is designed to give the student skill in reasoning and argumentation, a thorough knowledge of the history of Western culture, and an acquaintance with specific issues in applied and theoretical ethics, political theory, and philosophy of law. The course of study for a philosophy pre-law major includes the following:

Required for all philosophy majors: Phil. 10, 20, 104 or 108, 120, and 166 or 171.
Additional courses for pre-law: Phil. 13, 150, 172; two upper-division electives.
Recommended courses: Pol.S. 212 and 213.

Other courses can be chosen in accordance with the student's interests. Those planning to enter corporate law, for example, should take courses in economics (54, 55) or accounting (51, 52). Other recommended courses for the pre-law track in philosophy are Hist. 1, 2, 52, 53; Hum. 1, 2; Pol.S. 2, 120, 150, and courses in English and sociology and anthropology.

Faculty

Professors

Ralph W. Clark, Ph.D. (U. Colo.). Business ethics, Metaphysics, Ethics.
Theodore M. Drange, Ph.D. (Cornell U.). Epistemology, Philosophy of religion.
Virginia H. Klenk, Ph.D. (U. Pitt). Chairperson. Logic, Philosophy of mathematics.
Henry L. Ruf, Ph.D. (Emory U.). Philosophy of language, Comparative philosophy.
Mark R. Wicclair, Ph.D. (Columbia U.). Philosophy of law, Medical ethics, Ethics.

Assistant Professors

Richard A. Montgomery, Ph.D. (U. Ill. Chicago). Philosophy of psychology, Philosophy of science.
Sharon Ryan, Ph.D. (U. Rochester). Epistemology, Metaphysics.
Daniel Shapiro, Ph.D. (U. Minn.). Political philosophy, Ethics, Philosophy of law.

Visiting Assistant Professor

Roger P. Ebertz, Ph.D. (U. Neb.-Lincoln). Ethics, Epistemology, Philosophy of religion.

Lecturer

Patricia S. Long, M.A. (WVU). Logic.

Physics, Astronomy, and Physical Science

Degrees: Bachelor of Arts, Bachelor of Science
Larry E. Halliburton, Chairperson

Nature of Program

The Bachelor of Arts is designed as a strong foundation for professional careers in education, law, medicine, or government. The requirements for the degree allow many free elective choices. The Bachelor of Science (Physics) is designed as a strong foundation for the professional training of physicists, engineers and other scientists. The degree is intended for students who want to qualify for professional positions in industry, education, medicine, and government as well as for those who plan to do graduate work in physics, chemistry, geology, engineering, or related areas.

The courses in physics are designed for students majoring in areas where a background in physics is desirable. The department also offers courses of interest and value to a broad range of students in areas of general physics, education, astronomy, health sciences, and the fine arts.

The courses in physical science are designed especially for the nonscience major. The inquiry courses (Physical Science 1 and 2) are intended for majors in elementary education. The general courses (Physical Science 11 and 12) are intended to fulfill Liberal Studies Cluster C requirements.

Admission Requirements

Admission to the Bachelor of Arts and to the Bachelor of Science (Physics) program requires, in addition to college requirements, at least a 2.5 grade-point average in all required introductory physics and mathematics courses (which must include Phys. 11, 12, Math. 15, 16 or their equivalents).

Degree Requirements

The B.A. degree requires a minimum of 128 hours. This includes: 30 hours of University requirements (English 1, 2; LSP A & B); 15 hours of College of Arts and Sciences requirements (fine arts; language); and 53 hours in Physics Department requirements (29 in physics, eight in science, 16 in mathematics). Continuance in the program requires that the student maintain at least a cumulative 2.2 grade-point average in all physics and mathematics courses. Specific course requirements are in physics: Orientation 2 (physics section), Phys. 11, 12, 124, 231, 233, 241 (2 hr.), and nine hours electives; in mathematics: Math. 15, 16, 17, 18; in science: eight hours from biology, chemistry, and/or geology. In addition students have at least 38 hours of unrestricted free electives which can be used to prepare for entry into a professional program (teaching, law, medicine, for example) or into the job market.

The B.S. degree requires a minimum of 136 hours. This includes: 30 hours of University requirements (English 1, 2; LSP A & B); 15 hours of College of Arts and Sciences requirements (fine arts; language); and 70 hours in Physics Department requirements (43 in physics, eight in science, 19 in mathematics). Continuance in the program requires that the student maintain at least a cumulative 2.2 grade-point average in all physics and mathematics courses. Specific course requirements are in physics: Orientation 2 (physics section), Phys. 11, 12, 124, 231, 233, 232 or 234, 241 (3 hr.), 251, 263 or 271, 283, plus nine hours electives; in mathematics: Math. 15, 16, 17, 18, plus three hours elective; in science: eight hours from biology, chemistry, and/or geology. In addition students have at least 21 hours of unrestricted electives which can be used to prepare for entry into a graduate or professional school (physics, engineering, medicine, etc.) or towards a second degree. Early departmental advising is recommended in setting up a well-planned program.

Options

Qualified students with a cumulative grade-point average of at least 3.0 in physics courses may obtain a B.S. in Physics with Honors by carrying out a physics-related project in addition to the required courses. The project results, in the form of a written report, must be approved by a committee composed of three faculty members chosen by the student, at least two of whom are from the Department of Physics. Students should register for at least two hours of credit in Phys. 201. The undergraduate adviser serves as the department director for the Honors Program.

Faculty

Professors

Atam P. Arya, Ph.D. (Penn St. U.). Nuclear spectroscopy.

Bernard R. Cooper, Ph.D. (U. Calif.). Claude Worthington Benedum Professor of Physics. Surface electronic structure, Rare earth magnetism, Theory.

Martin V. Ferer, Ph.D. (U. Ill.). Phase transitions and critical phenomena, Theory.

Larry E. Halliburton, Ph.D. (U. Mo.). Chair. Solid state, Magnetic resonance, Experiment.

Oleg Jefimenko, Ph.D. (U. Ore.). *Emeritus.*

Arnold D. Levine, Ph.D. (Columbia U.). Field theory.
John E. Littleton, Ph.D. (U. Rochester). Astrophysics, Nucleosynthesis, Theory, Experiment.
Pedro A. Montano, D.Sc. (Technion). Adjunct. Surface physics, Mossbauer effect, Experiment.
Arthur S. Pavlovic, Ph.D. (Penn St. U.). *Emeritus.*
Carl A. Rotter, Ph.D. (Case West. Res. U.). Neutron scattering, Ultrasonics, Experiment.
Mohindar S. Seehra, Ph.D. (U. Rochester). Magnetic, electronic, optical properties of solids, Experiment.
Richard P. Treat, Ph.D. (U. Calif.). Aerosol physics, Experiment, Theory.
William E. Vehse, Ph.D. (Carnegie Mellon U.). Associate Provost. Optical properties of solids, Experiment.

Associate Professors
Stanley Farr, M.S. (WVU). *Emeritus.*
Douglas B. Williamson, Ed.D. (Columbia U.). *Emeritus.*

Assistant Professors
Wathiq Abdul-Razzaq, Ph.D. (U. Ill. Circle Campus). Solid state physics, Experiment.
Boyd F. Edwards, Ph.D. (Stanford U.). Fluid dynamics, Combustion processes, Percolation, Theory.
Nancy C. Giles, Ph.D. (North Carolina State U.). Optical properties of semi-conductors, Experiment.
Mark E. Koepke, Ph.D. (U. Maryland). Plasma physics, Experiment.
H. Arthur Weldon, Ph.D. (M.I.T.). Particle physics, Quantum fields, Theory.
Lane C. Wilson, Ph.D. (Stanford U.). Materials deposition, X-ray diffraction, Experiment.

Lecturer
Pauline Arya, B.S. (U. Toledo). Nuclear spectroscopy.

Political Science

Degree: Bachelor of Arts
Allan S. Hammock, Chairperson
Robert E. DiClerico, Associate Chairperson; Director of Undergraduate Studies
Robert D. Duval, Director of Graduate Studies

Nature of Program

The undergraduate curriculum in the Department of Political Science has five main objectives:

• To acquaint students with the nature and role of government in modern society, thus contributing to the general education of the student. In order to achieve this objective, the department offers the general political science track. This track is open to any student who has an interest in political science but who has not yet focused on a specific career goal.

• To impart a basic knowledge and understanding of the public policy making process, including the techniques used by policy analysts and public administrators. To accomplish this objective, the department offers the public policy and administration track. Students having a desire to work in government and/or to obtain an advanced graduate degree in public policy studies or public administration at WVU, or elsewhere, should enroll in this track. Additional information concerning graduate programs in

public administration and public policy (M.A., M.P.A., or Ph.D.) at WVU is found in the *WVU Graduate Catalog*.

• To provide pre-professional training for students preparing to enter the legal profession. Students interested in legal careers should enroll in the pre-law and legal studies track.

• To develop an understanding of the international and global dimensions of world and national politics. Students who wish to concentrate their course work in international relations and foreign affairs as preparation for careers in this area should enroll in the international and world affairs track.

• To provide pre-professional training for students who intend to pursue political science as a career. Those who intend to be teachers, researchers, or administrators should plan to enroll in graduate school after completing their bachelor's degrees. The professional political scientist who intends to teach or do applied research in public policy should choose the public policy and administration track. This track will prepare students for the M.A. and Ph.D. with an emphasis in public policy studies or the M.P.A. with an emphasis in public administration.

Students may apply for admission to the Department of Political Science after completing 58 credit hours with a cumulative grade-point average of 2.1 or better. In addition, students must maintain a cumulative GPA of 2.0 in order to remain a political science major. Freshman and sophomore students with a 2.0 grade-point average may apply as pre-political science majors. Upon admission, each student will be assigned a faculty adviser in the department. Pre-political science majors should enroll in Orientation 2 *Orientation to Majors and Professions*, which introduces freshmen and sophomores to the political science faculty, academic requirements, and career opportunities in political science.

Degree Requirements

A 2.0 grade-point average is required for graduation. In addition, no major with an incomplete in a political science course will be certified for graduation.

Students majoring in political science must take a minimum of 30 upper-division hours in political science. At least one course must be selected from each of the following fields:

American Government and Politics:
Pol. S. 110, 111, 120, 210, 212, 213, 214, 218, 221, 225, 226, 310.

Public Policy and Administration:
Pol. S. 130, 140, 137, 231, 235, 236, 238, 240, 242, 244, 246, 330, 331, 336, 338.

Comparative Government and Politics:
Pol. S. 150, 250, 251, 253, 254, 255, 256, 258, 351, 355.

International Relations:
Pol. S. 160, 261, 262, 263, 264, 265, 266, 267, 268, 269, 360.

Political Theory:
Pol. S. 170, 171, 272, 273, 279.

The department also offers two courses that deal with the scope of political science and the various techniques employed by political scientists to investigate and analyze political data: Pol. S. 100, and 300. Pol. S. 100 is required of all majors except those in the pre-law track, for whom it is optional. Pol. S. 300, while designed for graduate students, may be taken by advanced undergraduates. These courses count toward the 30 hours required of political science majors.

Students may also arrange to take selected special courses dealing with a special topic or involving experiential learning. These courses are scheduled on a group or tutorial basis with individual faculty members. Courses available for this type of instruction are: Pol. S. 188, 189, 191, 194, 195, and 299. These courses also count toward the 30 hours required in political science. However, no more than six hours of Pol. S. 194 *Field Experience*, may count toward the 30-hour requirement. Pol. S. 194 is graded on a pass/fail basis.

With the exception of the pre-law and legal studies track, all political science majors must take 12 hours in a secondary field. The choice of a secondary field depends on the interest of the student and the particular track in which the student is enrolled. Secondary fields available include: economics, geography, history, philosophy, psychology, sociology and anthropology, statistics and/or computer science, business, English, journalism, social work, communication studies, mathematics, foreign languages, and interdepartmental minor. No course numbered 190 Teaching Practicum may be used to satisfy major or secondary field requirements.

All majors are required to take Econ. 54 and 55. It is also recommended, though not required, that majors take Pol. S. 1, 2, 3, and 7 in preparation for upper-division political science courses.

Track Options

Each political science major must enroll in a political science track, depending on academic or career interest. The tracks and the individual requirements of each are:

General Political Science (general liberal arts). Students selecting the general track are expected to take courses that expose them to the full range of the discipline of political science and the other social sciences. Required: Pol. S. 100; Econ. 54 and 55; 30 upper-division hours in political science courses; and 12 upper-division hours in a secondary field. Recommended: Pol. S. 1, 2, 3, 7, and elective courses in sociology, anthropology, psychology, philosophy, geography, history, and economics.

Public Policy and Administration (public service careers). Students enrolling in the public policy and administration track take courses that prepare them for work in government, non-profit organizations, and selected private companies. This track emphasizes training in public policy analysis, public administration, selected policy issues (such as energy, environment, and civil rights), and statistical techniques. Required: Pol. S. 100, 120, 130, 140; Econ. 54 and 55; 6 hours from policy courses—Pol. S. 137, 231, 233, 235, 236, 238; and 12 upper-division hours in a policy field or selected secondary field. Recommended: Pol. S. 1, 2; Stat. 101; C.S. 5.

Pre-Law and Legal Studies (careers in law or criminal justice). Students selecting the legal studies option are required to take a variety of substantive and skills courses which are recognized as valuable background for the study of law. This specialized curriculum is drawn from several departments, including the departments of Political Science, Economics, English, Philosophy, Statistics, Accounting, Sociology and Anthroplogy, and Psychology. Required: Econ. 54 and 55; six hours (two courses) from the following law-related courses in political science: Pol. S. 110, 212, 213, 214, 244, 263; nine hours (three courses) from the following skills courses: Pol. S. 100, C.S. 5, Acct. 51 and 52, SPA 80, Engl. 108, Stat. 101, Phil. 1, 10, Econ. 125; and nine hours (three courses) from the following substantive courses in law-related disciplines: Soc. & A. 132, 133, 134, 230, and 261, Phil. 13, 172, Econ. 241 and 245, Psych. 151. Recommended: Pol. S. 1 and 2.

International and World Affairs (careers in international affairs). Students choosing the international and world affairs track specialize in several main sub-fields of the discipline, including international relations, foreign policy analysis, and foreign and comparative governments. This track is one of two options available to students interested in international relations. The Department of Political Science, in cooperation with other departments, also offers the interdepartmental major in international studies, which is headed by a faculty member in the Department of Political Science. This major offers an extensive treatment of international affairs from the perspective of a variety of disciplines. The International and World Affairs Track, on the other hand, is offered exclusively by the Department of Political Science. Required: Pol. S. 100, 150, and 160; Econ. 54 and 55; six hours (two courses) from the following courses dealing with international relations—Pol. S. 261, 262, 263, 264, 265, 266, 267; three hours (one course) which focuses on an industrialized country: Pol. S. 250, 251, 252, 253; three hours (one course) which deals with a developing country: Pol. S. 254, 255, 256,

258; and 12 upper-division hours in a secondary field. Recommended: Pol. S. 1, 3; Stat. 101 and C.S. 5.

Minor in Political Science

Any student admitted to a major program other than political science in the College of Arts and Sciences may complete a formal academic minor in political science. In order to earn a formal minor, students must complete one of these options:

American Politics and Policy. Required: Pol. S. 2, 120, and 130; two additional courses from 110-149 or 210-249.

International and Comparative Politics:. Required: Pol. S. 3, 150, and 160; two additional courses from 150-169 or 250-269.

Law and Legal Studies. Required: Pol. S. 2 and 110. One course from 212, 213, 214, 231, 235, 244, or 263; two additional courses from 110-149 or 210-249.

Political Theory. Required: Pol. S. 7, 170, and 171; two additional courses from 170-179 or 270-279.

Students must achieve at least 2.0 in the 15 hours taken in political science.

Honors Program

The Department of Political Science, in cooperation with the University Honors Program, offers courses which are open exclusively to honors students. These courses are listed in the University's *Schedule of Courses* each semester. Students who meet the standards of the University Honors Program may enroll in these courses.

In addition, the Department of Political Science offers honors courses for those who wish to gain departmental honors status. To achieve honors in political science a student must: (a) complete at least 15 hours in upper- division political science courses; (b) have a minimum grade-point average of 3.3; and (c) take at least six hours in upper-division honors sections of political science courses. Students interested in the Political Science Honors Program should contact the Director of Undergraduate Studies in the department.

Faculty

Professors

Orrin B. Conaway, Jr., Ph.D. (Syracuse U.). *Emeritus.*

Robert E. DiClerico, Ph.D. (Ind. U.). American government, Presidency, Parties and electoral processes, Public policy (agenda setting).

Hong N. Kim, Ph.D. (Georgetown U.). Comparative politics (Asia).

Herman Mertins, Jr., Ph.D. (Syracuse U.). Adjunct. Public administration.

Sophia L. Peterson, Ph.D. (UCLA). International relations, Global issues.

Gerald Pops, Ph.D. (Syracuse U.). Adjunct. Public administration.

George W. Rice, Ph.D. (Ohio St. U.). *Emeritus.*

David G. Temple, Ph.D. (U. Va.). State and local government, Urban politics.

James B. Whisker, Ph.D. (U. Md.). Political theory, Comparative government.

David G. Williams, Ph.D. (SUNY Albany). Adjunct. Public administration.

Rodger D. Yeager, Ph.D. (Syracuse U.). Comparative politics (Africa, political development).

Associate Professors

Robert J. Dilger, Ph.D. (Brandeis U.). Federation, Intergovernmental relations, Legislative politics.

Robert D. Duval, Ph.D. (Fla. St. U.). Methodology, Public policy (energy), International politics and policy.

Joe D. Hagan, Ph.D. (U. Ky.). International politics, Public policy (Foreign policy).

Allan S. Hammock, Ph.D. (U. Va.). Chair. American government, Public policy (civil rights, health care).

John A. Jacobsohn, Ph.D. (U. Md.). International relations, Comparative politics (Latin America).
Harvey Wolf, D.P.A. (U. So. Calif.). Adjunct. Public administration.

Assistant Professors
Richard A. Brisbin, Jr., Ph.D. (J. Hopkins U.). Public law, Judicial politics, Public policy (criminal justice, regulation).
D. Lyn Dotson, J.D. (WVU). Adjunct. American government.
Susan Hunter, Ph.D. (Ohio St. U.). Political theory, Policy evaluation. Public policy (environment).
John C. Kilwein, Ph.D. (Ohio St. U.). Judicial politics, Public law, Public policy.
Kenneth A. Klase, D.P.A. (U. Georgia). Adjunct. Public administration.
Kevin M. Leyden, Ph.D. (U. Iowa). Interest groups, Congress, American politics.
Jin W. Mok, Ph.D. (WVU). Adjunct. Public administration, Research methods.
Christopher Z. Mooney, Ph.D. (U. Wisc.). State politics, Legislative politics, Methodology.
Brigid A. Starkey, Ph.D. (U. Md.). International relations, Comparative politics (Middle East).
Jeffrey S. Worsham, Ph.D. (U. Wisc.). American politics, Bureaucratic politics.

Psychology

Degree: Bachelor of Arts
Barry A. Edelstein, Chairperson
Stanley H. Cohen, Associate Chairperson

Nature of Program

As part of a liberal arts education, courses in psychology convey the principles, methods, and theories which are necessary for a better understanding of human and animal behaviors. The program offers basic preparation for students interested in graduate work leading to a career in basic or applied psychology. It is also possible to prepare for a career as a bachelor's-level psychological assistant or technician, or for work in related social science fields. Undergraduate training in psychology emphasizes a broad liberal arts education. Excessive specialization in psychology is discouraged, particularly for students who intend to pursue graduate training in psychology. Such students should seek a strong supporting background in mathematics and the natural and social sciences.

Degree Requirements

Required Courses: Psych. 1, 2, 19, 131, 141, 151, 171, 218; one course from the following group: Psych. 223, 224, 225, 232; six credit hours of 200-level psychology courses excluding Psych. 213 and 218; and Stat. 101 or Econ. 125.

Thirty-two credit hours are required for a major in psychology.

Options

Students who major in psychology should consider three options. Those primarily interested in the professional application of psychological principles to human problems should select courses from the following group: Psych. 251, 262, 263, 264, 274, 279, 281, 282. Students primarily interested in graduate training in psychology should consider taking additional courses in the Psych. 223, 224, 225, and 232 series. Students interested in psychology as it applies to their personal and social development are encouraged to take Psych. 164 and 170.

All psychology majors are encouraged to consider upper-division courses which provide an opportunity for them to apply basic principles of psychology. Recommended for this purpose are Psych. 190, 194, and 213. Students must obtain instructors' consent before enrolling in these courses.

The most common electives for psychology majors include biology, child development and family relations, computer science, mathematics, philosophy, political science, social work, sociology and anthropology, and statistics.

Honors Program

The Department of Psychology Honors Program is designed to provide special enrichment, attention, and recognition for exceptional psychology majors. Admission to the program requires completion of nine hours of psychology, a psychology GPA of 3.5, and an overall GPA of 3.3. Graduation with honors in psychology requires the same GPAs and completion of an honors thesis (six hours of Psychology 297). Information about the Department of Psychology Honors Program is available in the undergraduate training office or from the honors program advisor.

Faculty

Professors

James F. Carruth, Ph.D. (U. Ill.). Associate Director, Training Director, Counseling and Psychological Services Center. Developmental patterns of students.

Stanley H. Cohen, Ph.D. (Mich. St. U.). Associate Chair. Quantitative methods, Applications of computers in behavioral sciences, Multivariate analysis

Philip E. Comer, Ph.D. (WVU). Director, Counseling and Psychological Services Center. Psychotherapy diagnostics, Developmental psychology, Psychology of the college experience, Hypnosis.

Barry A. Edelstein, Ph.D. (Memphis St. U.). Chair. Social competence, Behavioral assessment, Behavior therapy.

William J. Fremouw, Ph.D. (U. Mass.). Cognitive-behavioral therapy, Eating disorders, Forensic psychology.

Robert P. Hawkins, Ph.D. (U. Pitt). Behavior analysis of child behavior, Behavioral assessment, Development and evaluation of child treatment programs.

Kennon A. Lattal, Ph.D. (U. Ala.). Reinforcement theory, Laboratory analogs of human behavior, Experimental analysis of behavior.

Robert W. Miller, Ph.D. (Ohio St. U.). Adjunct. Industrial organizational psychology/ evaluation research.

Joseph Panepinto, Ph.D. (WVU). Adjunct. Community psychology, Program evaluation.

Hayne W. Reese, Ph.D. (U. Iowa). Centennial. Learning, memory, and problem solving across the life span as a function of cognitive processes, Life-span research methodology.

James N. Shafer, Ph.D. (Ohio St. U.). Experimental and applied behavior analysis, Educational technology, Stimulus control.

Associate Professors

Edward C. Caldwell, Ph.D. (Syracuse U.). Evaluation of educational practices, Basic research in reading.

James E. Capage, Ph.D. (Ohio U.). Adjunct. Clinical assessment, Psychotherapy, Abnormal behavior.

Philip N. Chase, Ph.D. (U. Mass.). Verbal behavior, Concept learning, Training and instruction.

E. Mark Cummings, Ph.D. (UCLA). Background anger, Attachment, Day care.

Michael Franzen, Ph.D. (S. Ill. U.). Clinical neuropsychology, Behavioral medicine, Measurement methodology.

Irving J. Goodman, Ph.D. (U. Rochester). Neural mechanisms of behavior, Psychop harmacology, Behavioral neuroscience.

David J. Hansen, Ph.D. (U. Miss.). Child abuse and neglect, Social skills assessment and training.

Katherine Karraker, Ph.D. (Mich. St. U.). Infant social development, Parent-infant relations, Effects of stereotypes.
Ruth A. Panepinto, Ph.D. (WVU). Adjunct. Community mental health, Alcohol/drug abuse.
B. Kent Parker, Ph.D. (U. Utah). Experimental analysis of behavior, Conditioning and learning, Stimulus control and memory, Research design and statistics.
Michael Perone, Ph.D. (U. Wisc.- Milwaukee). Experimental analysis of human/non-human behavior, Research methodology, Verbal behavior.
Richard J. Seime, Ph.D. (U. Minn.). Adjunct. Medical psychology, Psychotherapy, Psychological testing.

Assistant Professors
Virginia Goetsch, Ph.D. (U. Ga.). Behavioral medicine, Psychophysiology, Neuropsychology.
Debra G. Hull, Ph.D. (Kent St. U.). Adjunct. Human sexuality, Assertiveness training, Clinical and consulting.
Kevin Larkin, Ph.D. (U. Pitt). Behavioral factors in cardiovascular disease, Anger and blood pressure.
Stephen C. Luce, Ph.D. (U. Kans.). Adjunct. Behavior therapy (children), Autism.
Pamela Meadowcroft, Ph.D. (U. Pitt). Adjunct. Applied behavior analysis in educational settings.
J. Vernon Odom, Ph.D. (U. N.C.). Adjunct. Abnormal/normal visual development.
Joseph R. Scotti, Ph.D. (SUNY-Binghamton). Mental retardation, Developmental disabilities, Sexual abuse.

Religious Studies

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Manfred O. Meitzen, Chairperson

Nature of Program

The Department of Religious Studies in its courses offers instruction in the field of human experience concerning God-- the transcendent and ultimate concern. Such studies include intellectual examinations and discussions about this experience and about the resultant practices of ethics and ritual as well as the history of various religious traditions. The curriculum studies the world's great scriptures, the history of religions, contemporary religious thought, and the interrelation of theology and culture. Attention is given to the relevance of the subject matter to the lives of the students. Religious studies courses may be taken for University LSP credit (except Relig. 290 and 491) or for elective credit. They enrich the global, liberal arts education of the student. Also, an interdepartmental major in religious studies may be undertaken.

Admission Requirements

Admission to the interdepartmental degree program in religious studies requires a cumulative average of at least 2.0.

Degree Requirements

If admitted to the interdepartmental degree program in religious studies, the student will be required to complete satisfactorily 42 hours of course work. Of these 42 hours, 21 are in religious studies: six in Biblical studies, six in the history of religions, six in contemporary religious thought, and a three hour seminar on a selected topic. The other 21 hours fulfill requirements outside the Department of Religious Studies. The following three-hour courses are specifically required: Soc. & A. 5, 136, Hist. 101, 103, and Phil. 123. Also six hours of American and/or English

literature are required. Students must maintain at least a 2.0 cumulative average in the required course work in order to retain status as an interdepartmental major in religious studies.

Purposes and Options of the Degree

The interdepartmental degree in religious studies offers a basic general liberal arts education for students entering such professions as law, medicine, and business, if electives are carefully chosen. This major is useful to anyone seeking a professional career in religion, such as the ministry, academic study of theology or Biblical studies, religious journalism, or teaching.

Minor in Religious Studies

Any student working toward an Arts and Sciences degree may undertake a minor in religious studies. Fifteen hours of course work offered by the Department of Religious Studies must be completed with a grade-point average of at least 2.0 in order to fulfill the requirements of this minor.

Specifically, the course requirements for the minor are: one course in each of the three groups below; two courses in one of these groups to be selected by the student; a seminar on a selected topic in religious studies to be fulfilled by taking either Religious Studies 290 or, in some cases, by taking Religious Studies 197, the Honors Course in religious studies.

Studies in the History of Religion: Relig. 120, 121, 122, 128, 130, 131, 132.
Historical Critical Study of the Bible: Relig. 100, 101, 102, 103, 105.
Studies about Contemporary Religious Thought: Relig. 110, 111, 112, 150.

It is the responsibility of students minoring in religious studies to maintain close contact with the office of the Department of Religious Studies concerning the projected scheduling of the above courses.

Faculty

Professor

Manfred O. Meitzen, Ph.D. (Harvard U.). Chair. Contemporary theology, New Testament studies, Ethics.

Associate Professor

Alan W. Jenks, Th.D. (Harvard U.). Old Testament language and literature, Middle Eastern studies.

(Annually, visiting lecturers from other universities and colleges join the Religious Studies faculty.)

Slavic Studies

Degree: Bachelor of Arts
Major in Interdepartmental Studies
Marilyn Bendena, Coordinator

Nature of Program

The Slavic studies interdepartmental major provides a well-rounded understanding of the Soviet Union and Eastern Europe. The guidelines have sufficient depth to provide for further study on the graduate level in one of the Slavic areas and sufficient breadth to provide a meaningful liberal arts major. Included in the Slavic studies major are courses in the departments of foreign languages, history, philosophy, political science, and sociology and anthropology.

The demand of government and private industry for specialists in Russian and East European area studies has been expanding in recent years. This program prepares students for this job market. Certification to teach on the secondary level is

also possible, if the student simultaneously elects the required courses in the College of Human Resources and Education.

Although the major is interdepartmental, faculty members work closely together and with individual students to provide academic counseling and job referral. The coordinator of the program functions as principal adviser to majors. The program also offers extracurricular activities which help to develop an appreciation for the Slavic world.

Admission Requirements

The student must fulfill all University and College of Arts and Sciences degree requirements. The student must have the equivalent of two years of Russian.

Degree Requirements

The major requires a minimum of 30 hours, 15 of which must include: History 117 and 118; Russian 103 and 104 or Russian 109 and 110; Political Science 251 or 266.

The remaining hours required may be chosen from a flexible list of courses approved by the Slavic Studies Committee. Currently, such courses could include: History 111, 217, 219, 220, Foreign Literature in Translation 188, 189, Philosophy 113, Political Science 251, 266, Russian 103, 104, 105, 106, 109, 110, 144, 145, 292, and Sociology and Anthropology 145.

Faculty

Marilyn Bendena, Ph.D. (Wayne St. U.), Associate Professor of Foreign Languages.
Robert E. Blobaum, Jr., Ph.D. (U. Nebr.), Associate Professor of History.
Henry Ruf, Ph.D. (Emory U.), Professor of Philosophy.

Sociology and Anthropology

Degree: Bachelor of Arts
Ronald Althouse, Chairperson
Patricia Rice, Undergraduate Adviser

Nature of Program

Sociology and anthropology courses constitute an important part of a liberal education. They foster an awareness of the structure of human societies and of the social processes which operate in all groups, organizations, and institutions. The student is exposed to the methods of inquiry and to the special knowledge and insights of sociology and anthropology. Courses in the department also are intended to facilitate the application of sociological and anthropological principles to the wide range of contemporary social problems. Sociology and anthropology comprise an important part of the undergraduate education for those pursuing careers in law, the health professions, or business, and for engineers and scientists concerned with environmental and ecological problems. Majors in sociology and anthropology often find employment doing applied research with government agencies, assisting in community development and planning, or using knowledge of social organization and social processes in a variety of settings within the United States or abroad. Majors are well equipped for graduate training in the social sciences in pursuit of academic or applied research careers.

Admission Requirements

Students may apply for admission as pre-majors during their freshman or sophomore year. They may apply for admission as majors upon completion of 58 credit hours with a cumulative grade-point average of at least 2.0. for all tracks except the crime and justice track, which requires at least a 2.25. Both majors and pre-majors are

advised in the department. Students are encouraged to seek advice on careers and internships from faculty specializing in their chosen track.

Degree Requirements: B.A. and five year B.A./M.A. in Applied Research
B.A. in Sociology and Anthropology

• General Requirements: All students in the department are required to take the following courses in addition to the required courses in their chosen track:

Soc. & A. 1 *Introduction to Sociology*
Soc. & A. 5 *Introduction to Anthropology*
Soc. & A. 211 *Social Research Methods*
Stat. 101 *Statistics* (preferably in the sophomore year; PR: Math 3 or equivalent.)

• Track Requirements: Every major must complete the requirements of one of the departmental tracks. The tracks are in anthropology, crime and justice, health behavior, and sociology.

• Students majoring in the Department of Sociology and Anthropology must earn a minimum of 33 credit hours in departmental courses. Twenty-seven hours are required at the upper-division level, of which 12 (including Soc. & A. 211) must be at the 200-level. Specific courses are identified for each track. It is assumed that all elective courses are three-credit courses.

• Students are encouraged to do independent study, fieldwork, or an internship in their senior year, combining experiential work with previously acquired skills in a project appropriate to their track. Up to three credit hours of independent study (Soc. & A. 293) or field experience (Soc. & A. 194) may be counted toward fulfilling departmental elective requirements.

• An overall 2.0 grade-point average is required for graduation; a 2.0 grade-point average is also required in departmental courses for graduation.

Track Options

Anthropology : Anthropology is the study and science of human beings in both the past and the present, and as cultural and biological organisms. Socio-cultural anthropology is concerned with the study of contemporary cultures in the world, their nature, and their change. Archaeology is concerned with past cultures in all areas of the world. Physical Anthropology is concerned with our biological past and present. As a "holistic" science, majors are exposed to all aspects of the human condition. The major allows graduates to pursue graduate work or to find jobs in industry, government, or the private sector, in the U.S. or abroad.

In addition to general departmental requirements, anthropology track majors are required to take Soc. & A. 152, 255 (in the senior year), one 200-level cultural anthropology course, three upper-division anthropology electives, one upper-division elective in sociology, and one additional 200- level elective in any area.

Crime and Justice : Students in the crime and justice track focus on two problem areas: the violation of law, and the social and cultural organization of justice. The first area includes the study of juvenile delinquency; white collar, organized, and corporate crime; and terrorism. The second general area deals with the social construction of law: socio-cultural factors in law enforcement; rehabilitation and crime prevention; and critiques of the judicial system. Crime and Justice track students are well prepared for graduate-level study in crime, justice, or law, or for professional positions in the justice system.

In addition to departmental requirements, crime and justice track majors are required to take Soc. & A. 132, 133, 134, 230 (PR: 132), 261 (in the senior year), one upper-division elective in sociology (outside C&J), one upper- division elective in anthropology, and one additional elective at the 200 level in any area. For qualified students, an internship is encouraged.

Health Behavior : The health behavior track builds a broad fundamental awareness of socio-cultural, environmental, and behavioral aspects of human health. The major health problems facing the U.S. today have a strong behavioral component in

their causation, definition, prevention and treatment. The specialized training offered in the health behavior track prepares students for graduate study in health related areas or for employment in government, private industry or traditional health care institutions.

In addition to departmental requirements, Health Behavior track majors take Soc. & A. 125, Soc. & A. 258, Soc. & A. 271, and Soc. & A. 201 (in the senior year). Two additional health-related courses—in health promotion and disease prevention, and in contemporary health issues are planned but not yet in the catalog. If these are unavailable, students will take {approved} substitutes. Students must also take one upper-division elective in anthropology and one upper-division elective in sociology (outside the health area).

Sociology : Sociology is the scientific study of human society and social behavior in all its diverse forms. Among the aspects of social life covered are social groups (families, communities, factories); social inequality (class, race, gender); social institutions (religion, education, sports, family, economics, politics); social problems (war, crime, poverty) and social change (urbanization, social movements, technological revolutions). Because sociology track majors are exposed to the many aspects of society, they are therefore sought by those in industry, government, and the private sector who desire employees with a comprehensive understanding of the social world. Sociology track majors are also qualified to pursue graduate work in the social sciences and many professions.

In addition to departmental requirements, sociology track majors are required to take Soc. & A. 201 (in the senior year), five upper-division sociology electives (one of which must be at the 200-level), one upper-division elective in anthropology, and an additional 200-level elective in any area.

Five Year B.A./M.A. Program

Undergraduate students majoring in Sociology and Anthropology at WVU who have a grade-point average of 3.0 or better may apply in their junior year to enter the five year B.A./M.A. program which allows students to complete the M.A. degree in one year after the B.A. instead of the normal two years. Senior majors use some of their free hours to take specific courses required in the graduate program. Students must complete the methods sequence (Stat. 101, Soc. & A. 211) no later than the junior year to allow proper sequencing of graduate-level courses. Students who elect this option complete all the regular requirements for the degree of B.A. in sociology and anthropology and apply for admission to the Sociology and Anthropology graduate program upon completion of the B.A. degree. Interested students should consult with the department chairperson prior to registering for their junior year courses.

Minor in Sociology and Anthropology

Students with majors in Arts and Sciences desiring a minor in the Department of Sociology and Anthropology may do so by fulfilling the requirements of one of the minors listed below. (If more than one minor is desired, any given course will count toward fulfilling the requirements of only one minor.)

For all minors, a grade-point average of 2.0 is required in 15 hours of coursework in one of these options:

Anthropology. Students must take either Soc. & A. 5 or 51 and 12 additional upper-division hours in regular anthropology (not sociology) courses. Anthropology courses are numbered in the 50's—e.g. Soc. & A. 255.

Sociology. Students must take either Soc. & A. 1 or 7 and 12 additional upper-division hours in regular sociology (not anthropology) courses. Most departmental courses are sociology courses.

Crime and Justice. Students taking this minor must take specific courses. They are: Soc. & A. 132, 133, 134, 201, 230 (132 must be completed before enrolling in 230), and 261 (all of the other courses must be completed prior to enrolling in 261 which is a senior seminar).

Faculty

Professors

Ronald C. Althouse, Ph.D. (U. Minn.)—Chair. Sociology. Theory, Work, Occupational safety and health.

Richard A. Ball, Ph.D. (Ohio St. U.). Sociology. Deviant behavior, Criminology, Social psychology.

Harold H. Gibbard, Ph.D. (U. Mich.). Sociology. *Emeritus.*

Jiri T. Kolaja, Ph.D. (Cornell U.). *Emeritus.*

John D. Photiadis, Ph.D. (Cornell U.). Sociology. *Emeritus.*

Leonard M. Sizer, Ph.D. (U. Iowa). Sociology. *Emeritus.*

Jerold M. Starr, Ph.D. (Brandeis U.). Sociology. Life course, Social movements, Sociology of knowledge.

Associate Professors

G. David Curry, Ph.D. (U. Chicago). Sociology. Crime and justice, Quantitative methods, Survey and evaluation research.

Robert D. Foss, Ph.D. (U. Nev.). Sociology. Social psychology, Data analysis, American family.

David S. Hall, Ph.D. (U. Ky.). Sociology. Medical, Health care delivery.

Rumy Hilloowala, Ph.D. (U. Ala.). Anthropology. Adjunct. Physical.

Ann L. Paterson, Ph.D. (Mich. St. U.). Sociology. Education, Sex roles, Socialization.

Patricia C. Rice, M.A. (Ohio St. U.). Anthropology. Prehistoric art, Physical, Archeology.

John F. Schnabel, Ph.D. (U. Notre Dame). Associate Dean for Development. Sociology. Race relations, Religion, Teaching sociology.

Joseph J. Simoni, Ph.D. (U. Notre Dame). Sociology. Community, Ethnic relations, Health communication.

William I. Torry, Ph.D. (Columbia U.). Anthropology. Economic development, Ecology, Africa.

Assistant Professors

Sally W. Maggard, Ph.D. (U. Ky.). Sociology. Appalachian studies, Gender, Work, Social change.

Alan K. Mook, Ph.D. (Purdue U.). Sociology. Religion, Stratification, Racial and ethnic minorities.

Lawrence T. Nichols, Ph.D. (Boston C.). Sociology. Criminology, Social change, Theory.

Kenyon R. Stebbins, Ph.D. (Mich. St. U.). Anthropology. Medical anthropology, Latin America, Political economy of health.

Statistics

Degree: Bachelor of Science

Donald F. Butcher, Chairperson

Stanley Wearden, Pre-Statistics Adviser

Nature of Program

The Department of Statistics and Computer Science offers a degree program leading to a Bachelor of Science (Statistics). The program qualifies graduates for professional positions in industry, research, government service, or graduate study in statistics or one of the quantitative fields of science.

The field of statistics presents methods of making decisions on the basis of probability. The baccalaureate program in statistics trains the student to combine the scientific method with mathematics and inductive reasoning in order to serve on a

research team as a member who can design experiments, analyze the results, and draw inferences from them.

Students interested in a career in actuarial science should complete Stat. 261 and 262 during their junior year and Stat. 361 and 362 during their senior year.
A minor in statistics is available to students who are majoring in one of the degree programs offered by the College of Arts and Sciences.

Admission Requirements
Pre-Statistics Program of Study

Students must be qualified for admission to WVU and to the College of Arts and Sciences and present secondary-school credit for two units of algebra, one unit of geometry, and 1/2 unit of trigonometry or advanced mathematics or one unit of chemistry or physics as general requirements for admission to the pre-statistics program of study.

Additional Admission Requirements

Students must take the Standard ACT test or the SAT test. Automatic admission to pre-statistics will be granted if any two of the three requirements shown below are met:

- A 3.0 grade-point average in high school;
- A math ACT score of 22, or math SAT score of 467;
- A composite ACT score of 22, or combined SAT score of 920.

Those not satisfying these admission requirements as an entering freshman may gain admission to pre-statistics after successful completion of at least one year of university study. Transfer from pre-statistics to the statistics degree program will depend on academic performance in completing the required courses.

To transfer from another WVU degree program to pre-statistics or to the statistics degree program, students should ask their current adviser to complete an academic status change form, and then present this form, along with their academic records, to the College of Arts and Sciences Academic Advising Center on the second floor of the Student Services Center Building. When the Advising Center has processed the records, they will forward the file to the Department of Statistics and Computer Science in Room 308 Knapp Hall.

Statistics Degree Program

Students need at least a 2.5 grade-point average in all computer science, mathematics, and statistics courses attempted during the first two years of study to be admitted to the Bachelor of Science degree program in statistics. At a minimum this should include C.S. 15 and 16; Math. 15 and 16; and Stat. 201 and 212. Those who do not meet these minimum requirements but have displayed a special aptitude for statistics may request admission to the department on a provisional basis. Written petitions should be addressed to the Statistics Academic Standards Committee and delivered to 308 Knapp Hall.

Degree Requirements

Statistics majors must complete at least 60 hours of upper-division course work with at least 35 of these upper-division hours in statistics, computer science, and mathematics. At least 26 of these 35 hours must be in statistics. They must have at least a C in each course counted towards meeting the 35 upper-division hours in statistics, computer science, and mathematics.

Required Courses are as follows: Math. 15, 16, 17, 241; C.S. 15, 16; Stat. 196, 197, 201,212, 213, 261, 262; three of the following: Stat. 221, 231, 251, 291, 341, 351, 371, 381; six additional hours of upper-division course work in mathematics, statistics, and/or computer science, and at least 60 hours of upper-division course work.

No more than six hours of 190-199 course work may be used to fulfill the 35- hour, upper-division requirement in statistics, computer science, and mathematics; no more than 10 hours of 190-199 course work in any field may be used to fulfill the 60-hour, upper-division requirement.

Recommended Electives: Any course listed above and Stat. 190, 195, 361, 362; C.S. 26, 56, 76, 126; Math. 18, 113, 163, 213, 224, 251, 252, 255; E.E. 201; I.E. 250.

Minor in Statistics

Any student admitted to a degree program in the College of Arts and Sciences may take a minor in Statistics by satisfying the following:

- Completion of at least three hours of statistics theory (Stat. 261 or 361).
- Completion of an additional 12 hours of statistical theory or applications selected from among Stat. 201, 212, 213, 221, 231, 262 or 362 and 341.
- All grades must be C or higher in order to satisfy these requirements. Note that Math. 16 is a prerequisite for Stat. 261; Math. 17 is a prerequisite for Stat. 361.

Faculty

Professors

Donald F. Butcher, Ph.D. (Iowa St. U.). Chair, Statistics and Computer Science. Design and analysis of experiments, Monte Carlo simulation, Regression analysis.

Erdogan Gunel, Ph.D. (SUNY-Buffalo). Statistics. Bayesian inference, Categorical data analysis, Biometry.

E. James Harner, Ph.D. (Cornell U.). Statistics. Robust estimation, Statistical computation, Modelling observational studies.

Franz X. Hiergeist, Ph.D. (U. Pitt). Computer Science. Mathematics of computation.

Wayne A. Muth, Ph.D. (Iowa St. U.). Associate Chair, Computer Science. Simulation, Mathematical modeling, Computer performance.

Y. V. Ramana Reddy, Ph.D. (WVU). Computer Science. Artificial intelligence, Knowledge based simulation, Computer graphics.

William V. Thayne, Ph.D. (U. Ill.). Statistics. Statistical genetics, Regression analysis.

Edwin C. Townsend, Ph.D. (Cornell U.). Statistics. Linear models, Regression analysis.

George E. Trapp, Ph.D. (Carnegie-Mellon U.). Computer Science. Numerical analysis, Mathematical programming, Network models.

Stanley Wearden, Ph.D. (Cornell U.). Statistics. Biometrics, Statistical genetics, Population biology.

Associate Professors

John M. Atkins, Ph.D. (U. Pitt). Computer Science. Design of database management systems, Analysis of algorithms, Mathematics of computation.

Daniel M. Chilko, M.S. (Rutgers U.). Statistics. Statistical computing, Computer graphics.

William H. Dodrill, M.S. (Columbia U.). Computer Science. Microcomputer applications, Applications in medicine.

Shirley M. Dowdy, Ph.D. (U. Notre Dame). Assoc. Dean, Acad. Affairs; Statistics. Sampling, Statistical methods, Software for statistical education.

D. Michael Henry, Ph.D. (TCU). Computer Science. Databases, Cryptography, Micro interfacing.

Gerald R. Hobbs, Jr., Ph.D. (Kans. St. U.). Statistics. Nonparametric statistics, Regression analysis.

James D. Mooney, Ph.D. (Ohio St. U.). Computer Science. Operating systems, Text processing, Computer architecture.

Frances L. Van Scoy, Ph.D. (U. Va.). Computer Science. Programming languages and compilers, Software development environments, Parallel processing.

Assistant Professors

Magdalena Niewiadomska-Bugaj, Ph.D. (Adam Mickiewicz U., Poznan). Statistics. Discriminate analysis, Statistical expert systems, Statistical computing.

David A. Eichmann, Ph.D. (U. Iowa). Computer Science, Database systems, Programming languages, Software development environments.

Raghu R. Karinthi, Ph.D. (U. Md.). Computer Science. Solid modelling, Automatic feature extraction, AI process planning.

Sitaraman Muralidharan, Ph.D. (Ohio St. U.). Computer Science. Software engineering, Data structures, Software reuse.

Sumitra M. Reddy, Ph.D. (WVU). Computer Science. Knowledge representation, Ada.

Kankanahalli Srinivas, Ph.D. (N.M. St.U.). Computer Science. Artificial intelligence, Connectionism/Neural networks, Parallel processing.

Visiting Assistant Professor

Asesh K. Das, Ph.D. (Visua-Bharati U.) Computer Science. Expert systems, Intelligent tutoring and knowledge-based simulation.

Lecturers

Alan Butcher, M.S. (WVU). Computer Science. Knowledge based simulation.

James Foltz, B.S. (WVU). Computer Science. Systems programming.

Winsome D. Mundy, M.S. (WVU). Computer Science. Software engineering.

Ravi Raman, M.S. (WVU). Computer Science. Rule based programming.

College of Business and Economics

Cyril M. Logar, D.B.A. (Kent St. U.), Dean.
Gail Allen Shaw, C.P.A., Ph.D. (U. Mo.), Associate Dean.
Richard M. Gardner, M.B.A. (WVU), Assistant Dean, Director of Development.
Carol A. Henry, Ed.D. (WVU). Coordinator, Information systems and technology.
Jay H. Coats, Ph.D. (U. Pitt), Director of Graduate Programs.
Susan Gustin, B.A. (Duquesne U.), Director, Undergraduate Advising Center.
Stanley Kloc, M.B.A. (WVU), Director, Small Business Development Center.
Tom S. Witt, Ph.D. (Wash. U.), Executive Director, Bureau of Business Research; Director, Center for Economic Research.

Degrees Available

Bachelor of Science in Business Administration
- Accounting
- Finance
- Management
  - Human Resource Management
  - Operations Management
- Marketing

Bachelor of Science
- Major in Economics

Coordinated Dual Degree in Business and Foreign Languages Majors

Historical Background

The College of Business and Economics was founded in November of 1951 and graduated its first class in the spring of 1953. Since that time, the College of Business and Economics has become one of the largest colleges at West Virginia University. In 1954, the College became fully accredited by the American Assembly of Collegiate Schools of Business, the highest level of business accreditation.

In 1990, the new College of Business and Economics building was completed on the site of Old Mountaineer Stadium on the downtown campus adjacent to historic Woodburn Circle. The new four-story facility houses modern classrooms, two auditoriums, state-of-the-art computer laboratories, and space for the College's research and service centers.

Mission

As part of West Virginia University, the state's comprehensive land-grant university, the College of Business and Economics has a special responsibility to the citizens of the state to: (1) provide high-quality undergraduate and graduate professional education, (2) take a leadership role in scholarly and applied research, and (3) support extension, continuing education, economic development, and other public service activities. The College of Business and Economics is committed to active involvement in economic development and community relations at both the local and state levels.

The College of Business and Economics offers quality professional programs for undergraduate and graduate students. The College does so by developing and maintaining up-to-date programs, by recruiting outstanding students, serving their course needs, and meeting or exceeding standards of excellence set by the American Assembly of Collegiate Schools of Business. The College of Business and Economics faculty is made up of dedicated individuals who possess superior abilities as educators and researchers.

Because students are our most valuable resource and our most valuable product, our mission centers around preparing them for professional careers in business, industry, government, and education. The College administration and faculty work with the WVU Career Services Center and private employers to place our graduates in rewarding professional positions.

Whether students intend to operate their own firms or expect to join a large corporation, the program in business and economics helps to develop their managerial skills. Special fields of interest are accounting, economics, finance, management, and marketing. Flexibility with electives allows the student to strengthen the chosen program in special areas.

Accreditation

The College of Business and Economics is accredited by the American Assembly of Collegiate Schools of Business (AACSB) at the undergraduate and graduate levels. AACSB accreditation assures students and prospective employers that our programs adhere to the highest standards of excellence in nationally recognized business programs. The College has maintained full membership accreditation in the AACSB since 1954, and is among 17 percent of the nation's collegiate business programs to hold AACSB accreditation at both graduate and undergraduate levels.

Honor Societies

Beta Gamma Sigma Honorary for BSBA candidates of all majors.
Beta Alpha Psi for accounting majors.

Careers

Students seeking the BSBA degree must select a major. The career goals for each major are indicated after the description of the major in later sections. All majors emphasize professional education rather than training for a first position.

Student Organizations

American Marketing Association
Economics Club
National Association of Accountants
Society for Human Resource Management
WVU Student Banking and Finance Club

Special Units and Publications

Bureau of Business Research

The Bureau of Business Research (BBR) is the formal research division of the College of Business and Economics. BBR researchers work together with public and private agencies to foster business and economic growth and development, to conduct basic and applied research in business and economics, and to improve the operation and management of private and public organizations throughout West Virginia and the United States. A variety of projects and programs are administered by the BBR, many of which are funded through grant and contractual agreements with other agencies, both public and private. In essence, the BBR serves three related functions— research, information services, and publication.

For nearly three decades faculty, graduate students, and undergraduates associated with the BBR have engaged in research relevant to the state and the region. One mission of the BBR is to identify research needs and opportunities, particularly those related to the economic problems of the Appalachian region. Recent grant-supported activity has focused on three areas of concern to West Virginia—the development of travel and tourism, study and improvement of the business climate, and energy.

The resources of the BBR provide an extensive reference library, and research personnel regularly answer requests for statistical and economic information. As a member of the Association for University Business and Economic Research, the BBR receives the publications of research organizations at other member universities, thus maintaining a file of current research in business and economics.

Apart from its research and information services, the BBR also produces the quarterly *Journal of Small Business Management*, which has an international circulation.

In cooperation with the Center for Extension and Continuing Education, the BBR provides technical assistance in arranging continuing education and professional development programs involving the College of Business and Economics faculty.

Center for Economic Research

The Center for Economic Research (CER), assists in information-gathering and disseminating services. The CER serves as a major business and economic data center and is a depository for the U.S. Bureau of Economic Analysis (BEA) and Bureau of Census databases. The only agency in the state concerned with all aspects of West Virginia's business and economic climate, the Center charts business and industry trends and disseminates information about the state economy. The availability of such detailed data on the economic environment will help to make West Virginia more attractive to firms considering locations within the state. Among other projects, the CER will develop an input/output model for West Virginia, an econometric model, and a gross state product series.

Small Business Development Center

The WVU Small Business Development Center (SBDC) was established in 1984 to facilitate small business formation, stabilization, and growth. A member of a statewide network of ten college- and university-based centers, the WVU SBDC serves as a coordinator of federal, state, university, and private resources to encourage economic and business development. Specialized services offered by the SBDC include management consultation, business planning, procurement information, workshops, and research projects. The SBDC also provides information on financial planning and loan assistance. Through individual business counseling sessions, the entrepreneur or prospective business owner/manager can receive guidance from the SBDC in such specific areas as licensing procedures and regulation, tax information, accounting and basic record keeping, financial planning and cash flow analysis, market research, and marketing strategies.

In 1990, the SBDC provided professional counseling for 261 clients, conducted 20 conferences, workshops, and training seminars, and has cooperated with numerous organizations from the public and private sectors in economic development efforts. SBDC client statistics reveal that nearly half of those persons requesting assistance were already in business before coming into the program. Of the remaining clientele, about one-third actually decided to start their own small businesses. To date, the SBDC has provided information, counseling, training, and other types of assistance to more than 6,000 individuals and helped to start nearly 200 new businesses, resulting in the generation of over 900 jobs. The WVU SBDC also works with numemrous other organizations in leveraging resources and supporting activities for the purpose of improving business conditions throughout the state. Examples include involvement with economic development programs of both private and public sectors, such as Software Valley, Inc.; Main Street, West Virginia; and Partnership for Progress.

Institute of Industrial and Labor Relations

Faculty associated with the Institute of Industrial and Labor Relations combine teaching, research, and service activities. Research results concerning labor-management cooperation and economic development are made a part of the educational process within the College, and opportunities are available for students to assist with research.

Research and public service activities embrace study of those elements of labor-management relations and human resource development uniquely identified with West Virginia. The Institute for Labor Studies (ILS) and the Applied Research, Evaluation, and Planning (AREP) units at WVU, along with the ILR Department, have been the catalyst for two area labor- management committees funded by the Federal Mediation and Conciliation Service. The Institute, in partnership with West Liberty State College and West Virginia Northern Community College, has formed a University- Industry

Labor-Management Research Center. Institute faculty edit the *Labor Studies Journal* and the *Employee Responsibilities and Rights Journal.*

Emphasis is placed upon serving as a source of impartial data pertaining to human resources development problems in general and labor-management relations problems in particular. Studies conducted under the auspices of the Institute include analysis of state economic trends, longitudinal studies of labor force requirements, a cross-sectional analysis of state labor laws, annotated bibliographic studies pertaining to economic development and labor-management relations, and case studies of notable experiments in labor-management participation.

Admission

Pre-Business and Economics

High-school students interested in professional careers in accounting, economics, finance, management, or marketing should seek admission into the pre-business and economics program through the University Advising Center, located in the Student Services Center (phone 304-293-5805).

Admission to the College

On-campus and transfer students seeking admission to the College of Business and Economics must, **with no exceptions**, have:

- Completed 58 semester credit hours
- Attained a 2.5 or better grade-point average
- Completed the following courses with a C grade or better—
  - Six hours of principles of economics (Economics 54 and 55)
  - Six hours of principles of accounting (Accounting 51 and 52)
  - Three hours of college algebra (Mathematics 28)
  - Three hours of statistics (Economics 125)
- Completed the following courses with a passing grade—
  - Three hours of calculus (Mathematics 128)
  - Six hours of composition and rhetoric (English 1 and 2)

The foregoing are minimum requirements. Students meeting these requirements are **not** guaranteed admission into the college. Limitations on entry may be necessary depending upon the availability of faculty, other resources, and space. A formal application for admission must be submitted to the college. High school graduates interested in professional programs in business administration and economics must meet the minimum requirements for admission to WVU. Prospective students should file applications with the WVU Office of Admissions and Records and stipulate the Pre-Business and Economics program.

Prerequisites for Non-Business and Economics Students

To enroll in any upper-division, undergraduate business course, non-business and economics undergraduate students must have attained a 2.5 or better grade point average and completed six hours of principles of economics, six hours of accounting principles, three hours of statistics, Mathematics 28 or Mathematics 14, and three hours of calculus (Mathematics 128 or Mathematics 15). In addition, students must complete successfully six hours of composition and rhetoric (English 1 and 2).

Recommended Business Courses for Non-B & E Majors

If you are a nonbusiness student who wishes to obtain general knowledge about selected business topics and you do not meet the prerequisites for admission to upper-division business or economics courses or to the College of Business and Economics, please note that six business and economics courses (18 hours) are available to you. These courses have no prerequisites other than sophomore or junior standing as

indicated. These class standing or year prerequisites are enforced. For more information, read the course descriptions in the last section of this catalog.
These courses are:

Acctg. 51, 52 *Principles of Accounting* (PR: Sophomore Standing)
Econ. 54, 55 *Principles of Economics* (PR: Sophomore Standing)
Bus. A. 110 *Survey of Business Law* (PR: Junior Standing)
Bus. A. 120 *Survey of Management* (PR: Junior Standing)
Bus. A. 130 *Survey of Marketing* (PR: Junior Standing)
Bus. A. 140 *Survey of Finance* (PR: Junior Standing)

The business administration survey courses cannot be used as credit hours toward a business and economics degree. They also do not permit enrollment in any other upper-division business courses without successful passage of an equivalency examination and completion of the normal prebusiness prerequisities.

Work Taken at Other Institutions

Students seeking a degree from the College of Business and Economics and wishing to take work at other AACSB-accredited institutions must have their courses approved by the department chairperson and the Dean of the College of Business and Economics before registering at another institution. Ordinarily, required business courses must be taken at WVU.

Maximum and Minimum Load

A minimum of 12 hours in a semester is required for full-time status in the College of Business and Economics. The maximum load is 18 hours in the College. Exceptions to the minimum or maximum load require approval of the Academic Standards Committee of the College before registration. Students seeking to withdraw from individual courses must petition the Committee on Academic Standards whenever the remaining load falls below the required minimum, even though all other conditions supporting the request for the individual course withdrawal may be in order.

Undergraduate Advising

Eligible students are admitted into the College of Business and Economics through the Office of Undergraduate Advising, Room 357, Business and Economics Building (304-293-4959). Academic advising specialists assist all undergraduate business and economics students with academic concerns. Course registration, graduation certification, and special requests are administered by this office.

Requirements for Bachelor's Degrees

To qualify for either the Bachelor of Science in Business Administration or the Bachelor of Science in Economics, students must have:

1. Earned 128 semester hours of credit with a 2.0 grade-point average (C) on all work attempted at WVU and state institutions under the jurisdiction of the University of West Virginia Board of Trustees.

2. Maintained at least a 2.0 average on all work attempted after admission to the College of Business and Economics (not merely WVU).

3. Averaged a 2.0 (C) or better in course work in their area of concentration (excludes required or elective courses in other disciplines in business or economics).

4. Earned at least 30 hours of credit after admission to the College of Business and Economics, and in residence.

5. Satisfied the University Liberal Studies Program (LSP) requirements. Each student must complete 12 credits of University-approved Cluster A courses, 12 credits of University-approved Cluster B courses, and 11-12 credits of University-approved Cluster C courses. See the inventory of approved LSP courses in this book.

6. Completed at least one course that requires a substantial writing component and in which the grade is partially determined by writing skills. These courses will be

designated by a "W" in the LSP section of the *Schedule of Courses.* Students must have completed English 2 before fulfilling the W requirement. The College of Business and Economics offers two W courses: Economics 110 or 270 and Management 225.

While the preceding constitute the general requirements of the bachelor degrees of the College of Business and Economics, course requirements, specific grade requirements, and related academic requirements must be satisfied in one of the several curricula of the College of Business and Economics.

Undergraduate Curricula

The College of Business and Economics offers two degrees—Bachelor of Science in Business Administration and Bachelor of Science in economics. Programs leading to these degrees enable students to obtain a balanced selection of courses in liberal arts, a broad base of study in business and economics, and concentrated work in major areas of interest.

Bachelor of Science in Business Administration

The requirements for the Bachelor of Science in Business Administration are formulated in four parts: (1) 56 hours outside business and economics; (2) 8-12 hours of unrestricted courses in or out of the College of Business and Economics; (3) 36 hours in the common body of knowledge in business and economics; and (4) 24-28 hours in an area of concentration (accounting, finance, business management, or marketing) and in electives in business and economics with a career emphasis. Degree requirements are presented in chart form in subsequent sections.

Since students interested in careers in business matriculate in the pre-business and economics programs during their freshman and sophomore years, and since they transfer and matriculate in the College of Business and Economics in their junior and senior years, several vital dates and curricula requirements are cited below:

(a) Relative to pass-fail courses and grading, University regulations limit full-time junior and senior students with a 2.0 grade-point average to a maximum of four hours each semester or each summer session. The courses taken for pass-fail grading must be free electives and cannot exceed a total of 18 hours of credit. The College of Business and Economics permits pass-fail grading in business and economics courses only under these conditions:

(1) Pass-fail grading will be permitted only in courses numbered 200 *Special Topics* other than in the student's major area, and

(2) in "free" electives in business and economics and only where the student has met all requirements (including business and economics elective requirements) and only where the course is not necessary to fulfill the various program and 128 credit degree requirements.

(b) Students majoring in any of the several areas of business must average a 2.0 (C) or better from courses in their areas of concentration (excludes required or elective courses in other disciplines in business or economics).

(c) Students making application for initial admission to the College or reapplying for initial admission to the College must complete 58 or more credit hours, attain a 2.5 or better cumulative grade-point average, and must complete each of the following courses with a grade of C or better: six hours of principles of economics; six hours of accounting principles; three hours of statistics; and three hours of Mathematics 28 or Mathematics 14. In addition, a student must complete before entering the College: English 1 and 2 and Mathematics 128 or 15.

(d) A maximum of three credit-hours earned as a result of proctoring a self-paced undergraduate course, after entering the College of Business and Economics, may be applied towards the 128 credit-hours required for the B.S.B.Ad. degree.

(e) The mathematics requirement for all students seeking admission as a business student to the College is the completion of Mathematics 28 *Finite Mathematics* with a grade of C or better and the completion of Mathematics 128 Intro*duction to*

Calculus with a passing letter grade. (Credit established by the student in Mathematics 15 and 16 would meet the mathematics requirement. A grade of C or better in Mathematics 14 *Pre-Calculus Mathematics* established by the student seeking admission to the College as a business student would be acceptable in lieu of Mathematics 28.) The mathematics requirement must be met prior to the formal admission into the College.

Degree Requirements for Accounting, Finance, Management, and Marketing

Non-B & E Courses (freshman and sophomore years)	Hr.	Totals
Engl. 1 and 2 *Composition and Rhetoric*	6	
Engl. 105 *Business Communication*	3	
Math 28 *Finite Mathematics*	3	
LSP Cluster A Courses: Electives	12	
LSP Cluster B Courses:		
Psych. 1 *Introduction to Psychology*	3	
Soc. & A. 1 *Introduction to Sociology*	3	
Other Cluster B Electives (Non-economics)	6	
LSP Cluster C Courses:		
Math. 128 *Introduction to Calculus*	3	
C.S. 5 *Introduction to Computer Applications*	4	
Other Cluster C Lab. Science Elective (other than Stat. 101)	4	
Other Electives—Non-Business and Economics	9	56
Unrestricted Electives recommended for juniors and seniors (in or out of the College of Business and Economics)		8-12

All majors in business administration must complete a uniform body of common knowledge in business and economics, consisting of 36 credit hours.

Required College Core Courses:

Sophomore year		
Acctg. 51 and 52 *Principles*	6	
Econ. 54 and 55 *Principles*	6	
Econ. 125 *Elementary Business and Economics Statistics*	3	
Junior year		
Manag. 101 *Introduction to Business Information Systems*	3	
Manag. 105 *Contemporary Management*	3	
B. Law 111 *Legal/Ethical Environment of Business*	3	
Fin. 111 *Business Finance*	3	
Manag. 111 *Production and Quantitative Business Methods*	3	
Mrktg. 111 *Introduction to Marketing*	3	
Senior year		
Manag. 225 *Business Policy* (a W course)	3	36
Courses in Major Field and Electives* (junior and senior years)		24-28
Grand Total		128

Bachelor of Science in Economics

Knowledge of economics is essential for the understanding of a wide range of domestic and international issues. In economics courses the use of resources and the processes involved in production, distribution, and consumption of goods and services in the American and other economic systems are systematically studied. Undergraduate study in economics includes analysis of the development, organization, and functions of the economy. It involves analysis of the behavior of components of the

economy such as households, businesses, and governments, as well as the pricing, development, and use of resources, and regional and community development.

The Department of Economics offers courses designed to prepare the student for work in government and industry, for additional study in economics at the graduate level, and for professional studies in areas such as law, business administration, and public administration.

Students applying or reapplying for initial admission to the College must complete 58 or more credit hours, attain a 2.5 or better cumulative grade-point average, and complete each of the following courses with a C or better: six hours of principles of economics; six hours of accounting principles; three hours of statistics; and Mathematics 28 or Mathematics 14.

In addition, students must successfully complete English 1 and 2 and Mathematics 128, before entering the College. Mathematics 14, 15, or 16 are accepted in lieu of Mathematics 28 and 128. Students seeking the B. S. in economics are encouraged to meet the college mathematics requirement by completing Mathematics 15. Students intending to go into graduate work in economics should also complete Mathematics 16.The foregoing are minimum requirements.

All students who meet the specific requirements cannot be guaranteed admission to the college. Limitations on admissions may be necessary because of limits imposed by the size of the faculty, other educational resources, and of classroom space.

Students seeking admission to the college must submit a formal application, which is reviewed by a college official to determine eligibility and acceptability of the applicant. Upon admission to the college, students interested in the B.S. in Economics degree should contact the Department of Economics to request a faculty adviser. Students who major in economics must complete 62 credit hours in non-economics and non-business courses. These shall consist of WVU Liberal Studies Program courses and elective courses.

Non-Business and Non-Economics	Hr.	Totals
Engl. 1 and 2 *Composition and Rhetoric*	6	
LSP Cluster A Courses	12	
LSP Cluster B Courses (Other than Economics)	6	
LSP Cluster C Courses		
C.S. 5 *Introduction to Computer Applications*	4	
Mathematics	6-8	
Other Cluster C Lab Science elective	4	
Other Electives—Non-Business and Economics	22-24	
Non-Business and Economics		62
Unrestricted Electives		6
B.S. Degree in Economics Required College Core Courses:		
Acctg. 51 and 52 *Principles*	6	
Econ. 54 and 55 *Principles*	6	
Econ. 125 *Elementary Business and Economics Statistics*	3	
Econ. 211 *Intermediate Microeconomic Theory*	3	
Econ. 212 *Intermediate Macroeconomic Theory*	3	
Econ. 226 *Introductory Econometrics*	3	
		24
A minimum of 27 upper-division hours in economics, including required courses, is required of all students majoring in economics.		
Elective Courses Required in the College:		
Economics	15	
Business	9	
Economics or Business	12	
subtotal		36
Total		**136**

Multiple and Concurrent Bachelor's Degrees

If students seek to earn two bachelor's degrees simultaneously and if one of the two to be earned includes a Bachelor of Science in Business Administration or Economics, then they must meet all requirements leading to either undergraduate degree offered by the College of Business and Economics.

The student must complete all University LSP requirements, all College of Business and Economics core requirements, and must satisfy the course requirements of one of the College of Business and Economics curricula. (See Requirements for Degrees.) Students seeking to earn a Bachelor of Science in Business Administration or Economics and another bachelor's degree simultaneously must earn a minimum of 30 hours as a resident in addition to the minimum of 128 hours required by the college. In addition, students seeking a Bachelor of Science in Business Administration or Economics and another degree simultaneously must meet all admission requirements in order to be enrolled in the College of Business and Economics.

Coordinated Dual Degrees in Business and Foreign Languages

The coordinated dual degrees in business and foreign languages provide global career opportunities to students seeking both a bachelor of arts with a major in foreign languages and a bachelor of science in business administration. For details, see Part 6 Special Programs.

Second Bachelor's Degrees

Any student who has earned a bachelor's degree in another field from an appproved college or university may be eligible for the second bachelor's degree program, in business administration or in economics. Admission requires:

- Minimum grade-point average of 2.50 for the previous bachelor's degree;
- "C" or better in courses equivalent to Accounting 51, 52, Economics 54, 55, 125, and Mathematics 28;
- Passing grade in an introduction to calculus course;
- Six hours of English composition and rhetoric.

To qualify for the Bachelor of Science in Business Administration, a student must earn the following credits:

	Hrs.	Totals
Accounting 51 and 52	6	
Computer 5	4	
Economics 54 and 55	6	
Economics 125	3	
Business Law 111	3	
Finance 111	3	
Marketing 111	3	28
Management 101, 105, 111, and 225		12
Upper-division B&E electives*		16
Total		56

* No more than three hours of upper-division economics courses.

To qualify for the Bachelor of Science in economics, a student must earn the following credits:

Accountint 51 and 52	6	
Economics 54 and 55	6	
Economics 125	3	
Economics 211, 212, 226	9	24
Economics electives		15
Total		39

The student may complete a portion of the required B&E courses while earning the first undergraduate degree. However, candidates for the second bachelor's degree must complete a minimum of 30 semester hours of credit in courses offered by

the College of Business and Economics while in residence. Residency will be established after the student documents receipt of the first bachelor's degree.

Accounting

Robert S. Maust, M.S. (WVU). CPA; Chairperson and Professor; Financial accounting, Accounting theory, Managerial and cost accounting.

Degree Offered

Bachelor of Science in Business Administration

Objectives

Advanced work in accounting provides both specialized knowledge in accounting and financial reporting and an integrated overview of the economic activities of a business entity. Advanced accounting courses prepare students for a variety of positions in accounting, business, and financial management, such as controllers, financial officers, certified public accountants, managerial accountants, internal auditors, tax accountants, public administrative officers, and other executives.

Accounting Program Requirements	**Hr.**	**Totals**
Total Non-B and E Liberal Studies Program Requirements		56
Unrestricted electives (in or out of College of B&E)		8
Required College Core Courses		36
Accounting major requirements:		
Acctg. 111 and 112 *Intermediate Accounting*	6	
Acctg. 115 *Cost Accounting*	3	
Acctg. 200 *Special Topics: Microcomputers in Accounting*	1	
Acctg. 210 *Advanced Accounting*	3	
Acctg. 211 *Accounting Systems*	3	
Acctg. 213 *Income Tax Accounting*	3	
Acctg. 217 *Auditing Theory*	3	
B. Law 213 *Law for the C.P.A.*	3	
Econ. 130 *Money and Banking*, or Fin. 151 *Financial Institutions*	3	28
Grand Total		128

A grade of A or B in Accounting 52 is required of all students prior to registering for Accounting 111. Accounting majors must earn a grade of C or better in Accounting 111 before proceeding to Accounting 112 and a grade of C or better in Accounting 112 prior to graduation. Majors must have a 2.0 grade-point average on all course work taken in accounting.

The accounting major is designed to give students the basic educational background necessary to prepare for the professional examinations that may be required of them in their accounting careers. These examinations include those needed to become a certified public accountant (CPA), certified management accountant (CMA), and certified internal auditor (CIA).

Course requirements to qualify for the CPA examination may vary by state. Students are encouraged to contact the board of accountancy where they plan to sit for the examination for specific course requirements, if any. The departmental office has the addresses of all boards of accountancy.

Students planning to pursue careers in public accounting should be aware that the profession is moving towards a 150-hour requirement to sit for the CPA examination. In West Virginia, 150 hours of college credit will be required to become certified after July 1, 2000. This requirement is already effective in some states and will soon become effective in additional states. Students should contact the jurisdiction where they plan to sit for the examination to determine the hour requirement, if any, and its effective date.

Given this extended educational requirement, students may want to consider pursuing the additional hours immediately after earning the baccalaureate degree. Pursuing the Master of Professional Accountancy degree at WVU is one way to satisfy the additional hour requirement and earn a graduate degree at the same time. Interested students should contact the Director of Graduate Programs for the College of Business and Economics for details.

Career Paths in Accounting

Careers in accounting are frequently identified as being in public accounting, management accounting, governmental accounting, and internal auditing. The undergraduate accounting curriculum provides students with the basic educational background necessary to pursue careers in these fields. Accounting majors and potential majors are encouraged to consult with the faculty about the opportunities available and the preparation needed in the several career areas. A brief description of the activities in each area follows.

Public Accounting

Public accountants provide auditing, accounting, management consulting, and taxation services to their clients. In auditing, independent certified public accountants examine clients' financial statements and express a professional opinion on the presentation. Those engaged in auditing must become certified public accountants, the only class of accountants who are licensed and regulated by the various legal jurisdictions in the United States. In the case of accounting services, CPAs assist clients in performing accounting functions that, in larger companies, are normally provided by their employees. In the area of management consulting, CPAs advise clients on a variety of problems and assist with the development of information and control systems, and production and marketing systems. CPAs assist clients in the tax area with planning and advice, tax return and supporting document preparation, and representation before governmental agencies.

Management Accounting

Management accountants, the largest group of accountants, provide financial information that executives, creditors, and investors need to make sound business decisions. They also may prepare financial reports to meet the public disclosure requirements of various stock exchanges, the Securities and Exchange Commission, and other regulatory bodies. Management accountants may also be involved with taxation, budgeting, cost accounting, or investments. Management accountants may take an examination to become a certified management accountant.

Governmental Accounting

Governmental accountants work for federal, state, and local governments. The federal government hires accountants in many of its agencies, especially the Internal Revenue Service, the General Accounting Office, and the Defense Contract Audit Agency. Accountants at all levels of government are engaged in general accounting functions, financial management, budget preparation and administration, and operations audits to evaluate the efficiency and effectiveness of governmental activities.

Internal Auditing

Internal auditors examine and evaluate their firms' financial and information systems, management procedures, and internal controls. They review company operations by evaluating their efficiency, effectiveness, and compliance with corporate policies and procedures, laws, and government regulations. Internal auditing is growing in importance as top management must increasingly base its decisions on reports and records rather than personal observation. Internal auditors may take an examination to become a certified internal auditor.

Recommended Electives

Students preparing for careers in accounting may want to select electives from the following:

Business and Economics Electives:

Acctg. 200 *Special Topics*
Acctg. 214 *Income Tax Accounting*
Acctg. 230 *Advanced Accounting Theory*
Econ. 211 *Intermediate Microeconomic Theory*
Econ. 225 *Applied Business and Economic Statistics*
Econ. 245 *Government and Business*
Fin. 112 *Financial Management*
Fin. 115 *General Insurance*
Fin. 150 *Investments*
Fin. 212 *Working Capital Management*
Fin. 250 *Security Analysis and Portfolio Management*

Non-Business and Non-Economics Electives:

Comm. 11 *Principles of Human Communication*
Comm. 106 *Nonverbal Communication*
Comm. 109 *Human Communication in Organizations and Institutions*
Comm. 111 *Organizational Communication and Change*
Comm. 113 *Business and Professional Communication*
Engl. 8 *Intermediate Composition*
Engl. 108 *Advanced Composition*
I.E. 20 *Fundamentals of Industrial Engineering*
SPA 280 *Oral/Written Skills for Professionals*

Faculty

Professors

Jay H. Coats, Ph.D. (U. Pitt). Cost/managerial accounting, Microcomputers in accounting, Accounting education.

Robert S. Maust, M.S. (WVU). CPA. Financial accounting, Accounting theory, Managerial and cost accounting.

Adolph A. Neidermeyer, Ph.D. (U. Iowa). Federal/state income taxation, Estate planning, Financial accounting.

Gail A. Shaw, Ph.D. (U. Mo.). CPA. Financial accounting theory, Auditing, Business combinations.

G. Stevenson Smith, Ph.D. (U. Ark.). CPA, CMA, CCA. Not-for-profit and governmental accounting, Cost accounting, Managerial accounting.

Associate Professors

David B. Pariser, Ph.D. (So. Ill.). CPA, CCA. Financial accounting, Governmental accounting, Public sector accounting.

Ann B. Pushkin, Ph.D. (VPI&SU). CPA. Auditing, EDP auditing, Accounting information systems, Microcomputer applications.

Assistant Professors

Richard C. Brooks, Ph. D. (LSU). Managerial accounting, Governmental accounting, Public sector accounting.

Scott I. Jerris, Ph.D. (Purdue U.). Financial accounting, Accounting theory, Capital markets.

Bonnie W. Morris, M. B.A. (U. Pitt.). CPA. Accounting information systems, Expert systems and artificial intelligence, Internal auditing.

Timothy A. Pearson, Ph.D. (U. Wisc.). CPA. Auditing, Financial accounting, Microcomputer applications.

***Emeritus* Faculty**

Charles P. Skaggs, M.S. (WVU). CPA. Associate Professor.

Economics

William S. Reece, Ph.D. (Wash.U.-St.Louis). Chairperson and professor. Public economics, Econometrics.

Degree Offered

Bachelor of Science in Economics

Economics Program Objectives

The Department of Economics offers courses designed to prepare the student for work in government and industry, for additional study in economics at the graduate level, and for professional studies in areas such as law, business administration, and public administration.

Economics Program Requirements

Students applying or reapplying for initial admission to the College must complete 58 or more credit hours, attain a 2.5 or better cumulative grade-point average, and must complete each of the following courses with a C or better: six hours of principles of economics; six hours of accounting principles; three hours of statistics; and Mathematics 128 or Mathematics 15. In addition, students must successfully complete English 1 and 2 before entering the College.

The foregoing are minimum requirements. All students who meet the specific requirements cannot be guaranteed admission to the college. Limitations on admissions may be necessary because of limits imposed by the size of the faculty, other educational resources, and of classroom space.

Students seeking admission to the college must submit a formal application, which is reviewed by a college official to determine eligibility and acceptability of the applicant. Upon admission to the college, students interested in the B.S. in Economics degree should contact the Department of Economics to request a faculty adviser. Students who major in economics must complete 62 credit hours in non- economics and non-business courses. These shall consist of WVU Liberal Studies Program courses and elective courses.

For graduation, economics majors must attain a minimum cumulative GPA of 2.0 for all economics courses, computed using the last grade earned in each economics course. Economics majors are required to have a grade of C or better in Economics 211 and Economics 212.

Economics majors may take a maximum of nine of their 33 credit-hours in economics out of residence. Transfer students must take a minimum of 15 credit-hours of upper-division economics in residence. The undergraduate adviser can waive this requirement under special circumstances.

Requirements	Hrs.	Total
Non-Business and Non-Economics		
Engl. 1 and 2 *Composition and Rhetoric*	6	
LSP Cluster A Courses	12	
LSP Cluster B Courses (Other than Economics)	6	
LSP Cluster C Courses		
.S. 5 *Introduction to Computer Applications*	4	
Mathematics	8-6	
Other Cluster C Lab Science elective	4	40-38
Other Electives—Non-Business and Economics		22-24
Total Non-Business and Economics		62
Unrestricted Electives		6
Economics Required College Core Courses:		
Acctg. 51 and 52 *Principles of Accounting*	6	

Econ. 54 and 55 *Principles of Economics* 6
Econ. 125 *Elementary Business and Economics Statistics* 3
Econ. 211 *Intermediate Microeconomic Theory* 3
Econ. 212 *Intermediate Macroeconomic Theory* 3
Econ. 226 *Introductory Econometrics* 3
24

A minimum of 27 upper-division hours in economics, including required courses, is required of all students majoring in economics.

Elective Courses Required in the College:
Economics 15
Business 9
Economics or Business 12 36
Grand Total 128

Faculty
Professors
Donald R. Adams, Jr., Ph.D. (U. Penn). American economic history, European economic history, Economic development.
Jagdeep Bhandari, Ph.D. (SMU), LL.M. (Georgetown U.), J.D.(Duquesne U.). International trade and finance, International law.
Robert D. Britt, Ph.D. (U. Colo.). Managerial economics, History of economic thought, Economic history.
Ming-jeng Hwang, Ph.D. (Tex. A&M U.). General theory, Urban and regional economics, Mathematical economics.
Andrew W. Isserman, Ph.D. (U. Penn). Regional economics.
Kern O. Kymn, Ph.D. (U. Chicago). General theory, Mathematical economics, Econometrics.
Walter C. Labys, Ph.D. (Nottingham U.). Adjunct. Resource economics, Econometric modelling, Trade and development.
Patrick C. Mann, Ph.D. (Ind. U.). Industrial organization, Public utility regulation, Water supply.
Douglas Mitchell, Ph.D. (Princeton U.). Monetary theory, Macroeconomics theory.
William S. Reece, Ph.D.(Wash.U., St. Louis). Public economics, Econometrics.
Tom S. Witt, Ph.D. (Wash. U., St. Louis). Econometrics, Energy economics, Regional economics.

Associate Professors
Ronald J. Balvers, Ph.D. (U. Pitt.). Financial economics, Macroeconomic theory.
Brian J. Cushing, Ph.D. (U. Md.). Urban/Regional economics, Poverty, Econometrics, Public finance.
Clifford B. Hawley, Ph.D. (Duke U.). Labor economics, Microeconomic theory, Econometrics.
William Trumbull, Ph.D. (U. N.C.). Public finance, Law and economics, Economics of crime, Applied microeconomics.

Assistant Professors
Arnab K. Acharya, Ph.D. (U. Ill.). Microeconomic theory, Development, Mathematical economics.
Stratford M. Douglas, Ph.D. (UNC). Econometrics, Industrial organization, Corporate finance.
Govind Hariharan, Ph.D. (SUNY-Buffalo). Public finance, Economic growth.
Roger C. Tutterow, Ph.D. (Ga.St.U.). Microeconomic theory, Econometrics, Financial economics, Public economics.

Howard J. Wall, Ph.D. (SUNY-Buffalo). International economics, Microeconomic theory.
Royce J. Watts, M.S. (WVU). Statistics.

Faculty *Emeriti*
Vance Q. Alvis, Ph.D. (U. Va.). Professor.
Lewis C. Bell, Ph.D. (U. Ky.). Professor.
Thomas Campbell, Ph.D. (U. Pitt.). Professor.
James H. Thompson, Ph.D. (U. Pitt.). Professor.

Finance

William B. Riley, Ph.D. (U. Ark.). Chairperson and Professor. Investments, Capital Markets.

Degree Offered
Bachelor of Science in Business Administration

Finance Program Objectives

The finance program prepares students for a variety of positions in financial and non-financial enterprises. The corporate financial manager is involved with investing the firm's cash, managing its accounts receivable, evaluating new projects, and deciding on the firm's financial mix. Opportunities in corporate finance include positions as trainees in financial analysis, cash management, and credit management.

The finance program provides career prospects in commercial banking and financial institutions and the regulatory agencies overseeing these institutions. Job assignments in financial institutions involve management positions in areas including trust activity, credit evaluation, operations, and regulatory and charter compliance.

A variety of careers are available in the administration, underwriting, claims, marketing, agency management, and investment departments of insurance companies. Investment oriented students will find opportunities in brokerage firms, bank trust departments, pension fund management, foundation and endowment funds, mutual funds management, and a number of other financial and non-financial institutions where security analysis and portfolio management are vital functions.

Finance Program Requirements

This curriculum is available for all finance majors admitted to the College of Business and Economics on or after July, 1990. Students enrolled under earlier programs may switch to this curriculum if it is feasible. The finance curriculum totals 27 hours consisting of 15 required hours and 12 elective hours.

Finance Program	**Hr.**	**Total**
Non-B and E Liberal Studies Program		56
Unrestricted electives (in or out of CBE) See below.		9
Required College Core Courses		36
Fin. 112 *Intermediate Finance**	3	
Fin. 115 *General Insurance*	3	
Fin. 150 *Investments*	3	
Fin. 151 *Financial Institutions*	3	
Fin. 290 *Advanced Finance*	3	
Fin. 200 level electives See below.	12	27
Total		128

* The prerequisite for Finance 112 is a grade of B or better in Finance 111.

Electives

With your career goals in mind, select a minimum of 12 additional hours from the available 200 level finance courses. Since job opportunities and interests in finance may change after graduation, students are encouraged to select additional finance courses beyond the minimum required. All courses are not offered in all semesters.

Unrestricted and Outside Electives

Many employers prefer that finance majors have at least nine hours in accounting beyond Acctg. 51 and 52. Students desiring to attend top graduate schools should select additional courses in Math., Statistics and Economics. Students are encouraged to select courses from this list as electives in their bachelors program.

Acctg. 111 *Intermediate Accounting I*
Acctg. 112 *Intermediate Accounting II*
Acctg. 115 *Cost Accounting*
Acctg. 213 *Income Tax Accounting I*
Econ. 211 *Intermediate Microeconomic Theory*
Econ. 212 *Intermediate Macroeconomic Theory*
Econ. 225 *Intermediate Statistics*
Econ. 226 *Econometrics*

Faculty
Professors

Howard L. Brewer, Ph.D. (U. Iowa). Financial management, Portfolio applications.
William B. Riley, Ph.D. (U. Ark.). Investments, Capital markets.

Associate Professors

Terry L. Rose, Ph.D. (U. Ill.). Insurance, Risk management.
Frederick C. Scherr, Ph.D. (U. Pitt). Corporate finance, Capital markets.
Paul J. Speaker, Ph.D. (Purdue U.). Financial institutions, Modeling, Uncertainty.

Assistant Professors

Ashok Abbott, Ph.D. (VPI & SU). Financial institutions, Corporate finance, Mergers and acquisitions.
Victor Chow, Ph.D. (U. Ala.). Corporate finance, Portfolio management.
Karen Denning, Ph.D. (U. Pitt). Corporate finance, Speculative markets, Economic regulation.

Faculty *Emeriti*

Joseph Newhouse, M.S. (WVU). Professor.
Anthony Tuberose, Ph.D. (U. Tex.). Professor.
Fred E. Wright II, M.A. (WVU). Professor.

Management

Ali H. Mansour, Ph.D. (U. Georgia). Chairperson and Professor. Management information systems, Management science, Production operations management.

Degree Offered

Bachelor of Science in Business Administration

Management Program Objectives

Students interested in personnel, human resources management, management information systems, operations management, production, planning or in administrative and supervisory positions will find management the appropriate major.
A student majoring in management must arrange a program around one of two options: human resource management or operations management.

Students learn concepts, develop managerial skills in leadership, motivation, communications, decision making, and policy formulation. Simultaneously, they develop quantitative analysis and information processing abilities. Students also learn about the functional areas of human resources and production; and about the design, structure, and strategy of profit and nonprofit organizations; large and small businesses; and national and multinational corporations

Management Programs
Human Resource Management Option

Career opportunities for students in this option include: Personnel Management. There is a growing demand for specialists in the personnel area. Typical early positions are personnel staff specialist, training director, wage and salary specialist, employment manager, benefits analyst, and industrial relations supervisor.

General Management. Typical early positions are: department manager, merchandise manager, credit and collections manager, director of public relations, and community organization director.

Organizational Development. Typical early positions are: training specialist, training director, employee development specialist, personnel staffing specialist, and change agent.

Planning and Strategy. Typical early positions are: systems analysis, management trainee, assistant to the president, manager of manpower planning, and planning specialist.

Human Resource Management Option

Requirements	**Hr.**	**Total**
Non-B and E Liberal Studies Program Requirements		56
Unrestricted electives (in or out of College of B&E)		9
Required College Core Courses		36
Required courses in option:		
Acctg. 116 *Managerial Accounting*	3	
Manag. 201 *Business Information Systems*	3	
Manag. 205 *Individual and the Organization*	3	
Manag. 216 *Personnel Management*	3	
Manag. 217 *Personnel and Compensation*	3	
B. Law 112 *Commercial Law*	3	
Business and Economics Electives	9	
		27
Grand Total		128

Management majors following this option are urged to consult with faculty and follow the recommendations below in the selection of business, economics, and outside electives.

The following courses are recommended. However, there is no guarantee that these courses will be offered while the student is in attendance at WVU. The offering of courses is subject to availability and it cannot be guaranteed that recommended courses ever will be offered.

Recommended Business and Economics Electives:

Manag. 200 *Special Topics*
Manag. 206 *Organization Theory*
Manag. 213 *Problems in Business Administration*
Manag. 218 *Focal Points in Management*

Acctg. 216 *Advanced Managerial Accounting*
Econ. 160 *Labor Economics*
B. Law 211 *Personnel Relations and the Law*
I.L.R. 262 *Collective Bargaining and Labor Relations*

Recommended Outside Electives:
Pol. S. 140 *Introduction to Public Administration*
Psych. 101 *Leadership and Human Relations*
Psych. 151 *Introduction to Social Psychology*
Soc. & A. 233 *Sociology of Work and Work Places*
Comm. 221 *Persuasion*
I.E. 222 *Job Evaluation and Wage Incentives*
I.E. 280 *Industrial Engineering Problems*

Operations Management Option

Students with backgrounds in mathematics and/or statistics and those who desire to pursue the application of quantitative techniques to managerial decisions in considerable depth should enroll in this curriculum. Students selecting the operations management option will take courses emphasizing management science, operations research, systems analysis, organizational planning, industrial application of computer science, production or inventory planning and control, mathematics, statistics, and line positions in production.

Careers for students in the operations management option include the following positions: management information specialist, systems analyst, analyst trainee, industrial / production manager, operations systems manager, systems design speciaist, industrial buyer, inventory control specialist, materials manager, purchasing research analyst, manufacturing supervisor, and quality control.

Requirements	**Hr.**	**Total**
Non-B and E Liberal Studies Program Requirements		56
Unrestricted electives (in or out of College of B&E)		9
Required College Core Courses		36
Required Courses in option:		
Acctg. 116 *Managerial Accounting*	3	
Manag. 201 *Business Information Systems*	3	
Manag. 205 *The Individual and the Organization*	3	
Manag. 212 *Management Science I*	3	
Manag. 211 *Advanced Production Management*	3	
Manag. 222 *Management Science II*	3	
Business and Economics Electives	9	27
Grand Total		128

Recommended Business and Economics Electives:

The following courses are recommended. However, there is no guarantee that these courses will be offered while the student is in attendance at WVU. The offering of courses is subject to availability and it cannot be guaranteed that recommended courses ever will be offered.

Econ. 225 *Applied Business and Economics Statistics*
Manag. 206 *Organizational Theory and Analysis*
Manag. 216 *Personnel Management*
Fin. 112 *Financial Management*
Mktg. 207 *Business Logistics Management*

Recommended Outside Electives:

Business management majors electing the operations management option are particularly urged to choose courses listed below from either their Cluster A or B

requirements, unrestricted electives, or free outside electives (as appropriate):

I.E. 113 *Engineering Statistics* 3
I.E. 140 *Motion and Time Study* 3
I.E. 222 *Job Evaluation and Wage Incentives* 3
I.E. 242 *Production Planning and Control* 3
I.E. 249 *Design of Dynamic Materials Systems* 3
I.E. 277 *Engineering Economy* 3
I.E. 280 *Industrial Engineering Problems* 1-3
Soc. & A. 233 *Sociology of Work and Work Places* 3
Stat. 231 *Sampling Methods* 3
Math. 143 *Introduction to Linear Algebra* 3
Math. 241 *Applied Linear Algebra* 3
C.S. 270 *System Design* 3
C.S. 281 *Introduction to Artificial Intelligence* 3
C.S. 310 *Application Programming* 3
C.S. 360 *Design of Database Systems* 3
C.S. 370 *System Implementation* 3
Comm. 80 *Introduction to the Mass Media* 3
Comm. 221 *Persuasion* 3

A careful examination of the 128-hour degree requirement reveals that a 22 credit-hour block of outside elective courses may be used to support the operations management option (18 hours: ten hours from the free outside electives; and eight hours from the unrestricted area).

Students interested in the operations management program should consult with the management faculty as early as possible in their college careers, preferably as freshmen or sophomores. Electives should be selected from mathematics, computer science, statistics, and industrial engineering.

Faculty

Professors

Jack A. Fuller, Ph.D. (U. Ark.) Heuristic decision making, Production planning and control, systems analysis and design.

Ali H. Mansour, Ph.D. (U. Ga.). Management information systems, Management science, Production operations management.

Dietrich L. Schaupp, D.B.A. (U. Ky.). Organizational performance and development, Labor-management cooperation.

Associate Professors

Thomas L. Blaskovics, Ph.D. (U. Wisc.). Management information systems, Psychological testing.

John Harpell, D.B.A. (Ga. St. U.). Operations research, Mentorship, Production management.

Michael Lane, D.B.A. (Memphis St. U.). Business policy, Strategic planning, Small business planning.

Assistant Professors

Kunal Banerji, M.B.A. (U. Ky.). International business, Policy and strategy.

Gerald Blakely, Ph.D. (U. N.C.). Human resources management, Organizational behavior.

James Denton, MBA (Youngstown St.U.). Decision science, Operations management.

Cindy L. Martinec, Ph.D. (SUNY—Buffalo). Strategic management.

Robert H. Moorman, Ph.D. (Ind.U.). Human resource management, Organizational behavior.

Monika Renard, M.B.A. (Texas A&I U.). Human resource management.

Lutfus Sayeed, M.S. (Ga. St. U.). Decision science, Management information systems.
Linda Sypolt, J.D. (WVU). Copyright/patents, Labor law.
Michael Wolfe, Ph.D. (U. Tex.). Information systems.

Instructor
George Markusic, J.D. (WVU). Business law.

Lecturer
Richard M. Gardner, M.B.A. (WVU). Organizational behavior.

Faculty *Emeriti*
Charles E. Hooper, Ph.D.(WVU). Associate Professor.
Thomas S. Isaack, Ph.D. (Ind. U.). Professor.

Marketing

Robert Cook, D.B.A. (Kent St. U.). Chairperson and Associate Professor. Sales management, Product management, Marketing strategy and planning.

Degree Offered
Bachelor of Science in Business Administration

Marketing Majors

Marketing offers a wide variety of career opportunities in such fields as promotion management (advertising and sales); sales management; distribution (retail and wholesale management, purchasing, transportation management, and physical distribution); and marketing research. The marketing curriculum is designed to give the students a broad working knowledge of the theory and practice of marketing as preparation for employment or further study.

Electives provide flexibility in the several phases of marketing adaptable to the students' special career interest in either small and local firms or the multinational corporate giants (see career paths below). Students interested in pursuing careers in any of these areas should enroll in this program.

Marketing Program Requirements	**Hr.**	**Total**
Non-B and E Liberal Studies Program Requirements		56
Unrestricted electives (in or out of College of B&E)		11
Required College Core Courses		36
Required courses in major:		
Mrktg. 211 *Marketing Management*	3	
Marketing electives (see Career Paths)	18	
Business and/or Economics Electives	3	24
Grand Total		128

Marketing Career Path Guidelines

While marketing majors are free to select any combination of marketing elective courses, economic electives, other business electives, and outside courses to meet program and degree requirements, students are urged to consult with faculty and consider the guidelines and recommendations enumerated below in the several possible career paths in marketing.

The following courses are recommended. However, there is no guarantee that these courses will be offered while the student is in attendance at WVU. The offering of courses is subject to availability and it cannot be guaranteed that recommended courses ever will be offered.

Distribution/Purchasing Career Path
Recommended Marketing Electives (18 hours):
- Mrktg. 113 *Marketing Research*
- Mrktg. 130 *Product and Price Policy*
- Mrktg. 114 *Personal Selling*
- Mrktg. 160 *Retailing Management*
- Mrktg. 115 *Distrib. Channels*
- Mrktg. 207 *Business Logistics Management*
- Mrktg. 120 *Promot. Management*
- Mrktg. 210 *Industrial Mrktgement*

Required of All Marketing Majors (three hours):
- Mrktg. 211 *Marketing Management*

Recommended Business Electives (three hours):
- Manag. 205 *The Individual and the Organization*
- B. Law 112 *Commercial Law*
- Acctg. 116 *Managerial Accounting*
- Fin. 112 *Financial Management*

Recommended Economics Electives:
- Econ. 245 *Government and Business*

Recommended Outside Electives:
- C.S. 60 *Introduction to COBOL*
- Pol. S. 100 *Introduction to Political Analysis*
- Engl. 208 *Scientific and Technical Writing*
- Pol. S. 200 *Quantitative Political Analysis*
- Phil. 10 *Introduction Symbolic Logic*
- Comm. 107 *Human Communications/Rational Decisions*
- Phil. 106 *Mathematical Logic*
- Stat. 231 *Sampling Methods*
- Psych. 101 *Leadership and Human Relations*
- Soc. & A. 204 *Complex Organizations*
- Psych. 151 *Introduction to Social Psychology*
- Soc. & A. 233 *Sociology of Work*

Sales Management Career Path
Recommended Marketing Electives (18 hours):
- Mrktg. 113 *Marketing Research*
- Mrktg. 130 *Production and Price Policy*
- Mrktg. 114 *Personal Selling*
- Mrktg. 203 *Sales Management*
- Mrktg. 115 *Distribution Channels*
- Mrktg. 205 *Consumer Behavior*
- Mrktg. 120 *Promot.ion Management*
- Mrktg. 210 *Industrial Marketing*

Required of All Marketing Majors (three hours):
- Mrktg. 211 *Marketing Management*

Sales Management Continued.
Recommended Business Electives (three hours):
- Acctg. 111 *Intermediate Accounting*
- Manag. 216 *Personnel Management*
- Acctg. 112 *Intermediate Accounting*
- Manag. 217 *Personnel & Compensation*
- B. Law 112 *Law for Managers*
- Fin. 112 *Financial Management*
- Manag. 205 *Individual & Organization*

Recommended Outside Electives:
- Psych. 101 *Leadership & Human Relations*
- Comm. 106 *Non-Verbal Communication*
- Psych. 151 *Social Psychology*

Comm. 111 *Human Communication*
Psych. 164 *Personal & Social Adjustment*
Engl. 208 *Sci.entific/Technical Writing*

Marketing Research Career Path
Recommended Marketing Electives (18 hours):
Mrktg. 113 *Marketing Research*
Mrktg. 130 *Prod. & Price Pol.*
Mrktg. 114 *Personal Selling*
Mrktg 203 *Sales Management*
Mrktg. 115 *Distribution Channels*
Mrktg. 205 *Conscious Behavior*
Mrktg. 120 *Promotional Management*
Mrktg. 207 *Business Logistics Management*
Required of All Marketing Majors (three hours):
Mrktg. 211 *Marketing Management*
Recommended Business Electives (nine hours):
Fin. 112 *Financial Management*
Manag. 212 *Management Science I*
Manag. 201 *Business Information Systems*
Manag. 222 *Management Science II*
Manag. 205 *Individual & Organization*
B. Law 112 *Commercial Law*
Recommended Economics Elective:
Econ. 225 *Appl.ications of Business & Econ. Stat.*
Recommended Outside Electives:
Stat. 212 *Intermediate Methods*
Psyc. 151 *Introduction to Social Psychology*
Stat. 231 *Sampling Methods*
Psych. 225 *Cognition & Perception*
Stat. 251 *Data Analysis*
Psych.262 *Assessing Behavior*
C.S. 60 *Introduction to COBOL*

Promotion Management Career Path
Recommended Marketing Electives (18 hours):
Mrktg. 113 *Marketing Research*
Mrktg. 130 *Production & Price Policy*
Mrktg. 114 *Personal Selling*
Mrktg. 160 *Retail Management*
Mrktg. 115 *Distribution Channels*
Mrktg. 203 *Sales Management*
Mrktg. 120 *Promotion Management*
Mrktg. 205 *Consumer Behavior*
Required of All Marketing Majors (three hours):
Mrktg. 211 *Marketing Management*
Recommended Business Electives (three hours):
B. Law 112 *Business Law for Managers*
Manag. 205 *Individual & Organization*
Acctg. 116 *Management Accounting*
Fin. 112 *Financial Management*
Recommended Outside Electives:
PR 111 *Introduction to Public Relations*
Adv. 251 *Direct Marketing*
Adv. 113 *Principles of Advertising*
Psych. 151 *ntroduction to Social Psychology*
Adv. 114 *Retail Advertising*
Comm. 80 *Introduction to Mass Media*

Adv. 203 *Media Analysis*
Comm. 221 *Persuasion*
Adv. 204 *Media Management*

Faculty
Professors
R. Eugene Klippel, Ph.D. (Penn. St. U.). Kmart Professor of Marketing. Marketing planning, Retail management, Strategic planning.
Cyril M. Logar, D.B.A. (Kent St. U.). Dean. Health care marketing, Strategic marketing planning, Marketing research.
Terry Wilson, Ph.D. (Mich. St. U.). Services marketing, Marketing planning.

Associate Professors
Robert W. Cook, D.B.A. (Kent St.U.). Sales management, Product management, Marketing strategy and planning, Retail management.
Philip Mahin, M.B.A. (U. Penn.). Industrial marketing, Sales management, Personal selling.
Thomas Ponzurick, D.B.A. (Memphis St. U.). Services marketing, Transportation, Health care and entertainment-related services, International marketing.

Assistant Professors
Paula F. Bone, Ph.D. (U. South Carolina). Consumer behavior, Promotion, Marketing research.
Robert Corey, Ph.D. (Penn St.U.). Channels of distribution, New product development, Direct marketing, Retail management, Business ethics.
Barrent R. Kittle, Ph.D. (U. Ala.). Marketing communications, Marketing management.
Gordon McClung, Ph.D. (U. Pitt). Consumer behavior, Advertising, Marketing strategy and policy.
Bonnee Wettlaufer, M.B.A. (Ga. St. U.). Visiting. Consumer behavior, Marketing research.

Lecturer
John L. Porter, M.B.A. (WVU). Retail management.

Faculty *Emeriti*
Robert E. Conner, M.B.A. (WVU). Associate Professor.
Evan O. Roberts, Ph.D. (U. Wisc.). Professor.
Jack Turner, D.B.A. (Ind. U.). Professor.

College of Creative Arts

Margaret O. Lucas, D.Ed. (Penn St. U.). Dean
Richard W. Phalunas, Jr., Ed.D. (WVU). Special Assistant to the Dean

Degree Programs

Bachelor of Arts
- Art
- Music (in conjunction with the College of Arts and Sciences)

Bachelor of Fine Arts
- Theatre
- Visual Art (with or without certification)

Bachelor of Music

Introduction

Creative development in art, music, and theatre is the purpose of the College of Creative Arts of West Virginia University. A distinguished faculty of musicians, actors, directors, and artists bring to the center's outstanding facilities a commitment to a creative process of artistic growth which is shared with each student. Here, in a rich environment of plays, art exhibits, and concerts, we offer students the knowledge, skills, and inspiration necessary for professional success.

College of Creative Arts performance grants are available each year in the Divisions of Art, Music, and Theatre. The Divisions of Music and Theatre maintain additional scholarship funds.

Auditions for scholarships in music and theatre and portfolio reviews for scholarships in art are scheduled throughout the school year. For information or an appointment, write to the appropriate chairperson, College of Creative Arts, West Virginia University, P.O. Box 6111, Morgantown, WV 26506-6111, or telephone (304) 293-4841.

Admission Requirements

The College of Creative Arts uses the admission standards and procedures of the University. In addition, because of the creative nature of our students, we admit some students under the "Individual Consideration" clause of the general admission policy. This category allows admission of exceptionally talented students in art, music, and theatre who might not meet the criteria for grade-point averages and standardized test scores.

The Division of Art reserves the right to review portfolios and the Division of Theatre may audition prospective students before an admission decision. All music applicants must audition before consideration for admission to a program in the Division of Music. Please refer to the specific criteria of the three divisions in their program descriptions.

Students transferring to the College of Creative Arts from other colleges and universities are required to present a minimum grade-point average of 2.0 in addition to the standard auditions or reviews. Exceptions may be made in the case of first-semester freshman students.

Graduation Requirements

The Divisions of Art, Music, and Theatre have specific graduation requirements for their programs. Please refer to the individual program descriptions for this information.

Application for Graduation

During the second semester of your junior year, please come to the College of Creative Arts Records Office and request a review of your records and the require

ments of your particular program. During the first month of your last semester (the one in which you expect to graduate) or summer session, you will apply for graduation and diploma. If you do not actually graduate when you expected to, you must re-apply for a later date. No candidate can graduate without this application.

Division of Art

Bernard Schultz, Ph.D. (U. Pitt)—Chairperson. Art history, Italian renaissance, Modern art, Art theory.

Degree Programs

Bachelor of Arts
- Art

Bachelor of Fine Arts
- Visual Art (Ceramics, Graphic Design, Painting, Printmaking, Sculpture)
- Certification Option with the B.F.A.

Nature of Program

The Division of Art is an accredited institutional member of the National Association of Schools of Art and Design. The curriculum of the division is designed to afford the student an opportunity to explore the visual arts. Undergraduate programs offer scholarly and studio experiences to potential artists and teachers. The in-depth instruction is enhanced by the close working relationship between students and faculty, which allows sharing the insights and investigative processes of professional artists and scholars.

A bachelor of fine arts (B.F.A.) or bachelor of arts (B.A.) degree is conferred upon those students who satisfy all University and departmental requirements, complete the appropriate curriculum, and comply with the general regulations of the University concerning degrees.

A candidate for a degree in the Division of Art must maintain a minimum grade-point average of 2.0 (C); admission to the teacher certification program requires a grade-point average of 2.5. In addition, students may be requested to present a portfolio of selected works for examination and evaluation by a faculty committee. The committee is empowered to make recommendations regarding the student's continuing work toward a degree in art.

Transfer applicants must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Art. Evaluation for advanced standing or transfer credit in studio subjects is not made solely upon the presentation of a transcript but also depends on the evaluation of a portfolio of art work. The Division of Art requires a portfolio examination for placement in the program.

Other Programs

For information concerning the undergraduate interdepartmental program in art history, please contact the Division of Art office in the College of Creative Arts or see Interdepartmental Majors in the College of Arts and Sciences.

Advising

The College of Creative Arts recommends that all art majors confer regularly with their advisers in order to maintain the correct distribution of course work and to establish the necessary prerequisites for upper-division instruction. Students will find it difficult to carry more than three studio art classes in one semester.

Portfolio Review

The Division of Art reserves the right to require a portfolio review to determine a student's retention in a program or emphasis.

Audit, Credit by Examination, Pass/Fail, and Non-Art Major Courses

No studio courses are available on an audit or credit by examination basis. Students enrolled in the Division of Art may not take art classes on a pass/fail basis. Courses designated for non-art majors may not be substituted for art degree requirements unless approved in advance by the chairperson of the Division of Art.

Student Work

Every effort is made to protect student work and property. Work displayed in the WVU Art Galleries is insured for the exhibition period. The Division of Art does not accept responsibility for damage or losses under other circumstances. The Division of Art reserves the right to retain certain examples of student work for reproduction and exhibition purposes.

Art Supplies

Supplies for classroom presentations, demonstrations, and common use must—for economy and availability—be purchased from a central source and fund. To expect every student individually to supply all materials needed for high consumption courses of instruction would create a situation of excessive financial hardship for most and a complex logistical problem for all. To offset this burden, the Division of Art orders in advance necessary supplies through the WVU Book Store at a bulk rate, and requires each student enrolled in those studio classes in which materials are supplied to share the cost through one payment per semester.

The cost varies according to the area of instruction and may range from as little as $50.00 per semester for a freshman student to as much as $135 per semester for a senior in some major areas. Instructors can provide a complete list of materials to be supplied.

Bachelor of Fine Arts (B.F.A.)

The bachelor of fine arts (B.F.A.), a professional degree, is awarded to those persons who have satisfactorily completed the required 126-127 semester credit hours of study and made the expected commitment to the vocation of art. This degree program requires an amount of self-education based on a sound foundation of studio experience. Students in the B.F.A. curriculum may participate in a wide range of studio class work, including drawing, design, painting, printmaking, ceramics, graphic design, and sculpture, as well as a program of art history. Through careful counseling, individual goals are established in keeping with the student's aims and talents.

The Division of Art is committed to providing the opportunity and the environment for the best possible education in the visual arts at both the undergraduate and graduate levels. The division's program of professional education is centered in the studio arts and reinforced with art history and liberal studies. Students are encouraged to take advantage of the broad range of educational possibilities available at the University and to enroll in courses that support their professional goals and enrich their knowledge.

Curriculum Requirements

Once accepted into the University and the art program, the B.F.A. candidate must complete curriculum requirements in order to graduate. The B.F.A. curriculum includes required and elective art courses, art history courses, and University-established academic (liberal studies) requirements. During the first two years, the art student must complete a sequence of courses in drawing and foundation visual design for a total of 19 credit hours. Art electives, which are available in all major studio areas, are designed to provide the basic experience to enable a student to select a major by the beginning of the third (junior) year. The student must complete 12 credit hours of these

studio electives and six credit hours of art history survey to complete the lower-division requirements of the art program (a total of 37 hours within the Division of Art). B.F.A. Degree credit-hour minimum requirements are as follows:

	Hr.
Studio (12 credits in drawing; 30 credits in major area)	73
Art orientation	1
Art history	12
Liberal arts (required by the University)	38
Open Electives	3
Total	127

Bachelor of Fine Arts (B.F.A.)
Ceramics, Graphic Design, Painting, Printmaking, Sculpture

In order to complete the B.F.A. degree program in four years, a student must take from 15 to 18 credit hours per semester, or 30 to 36 credits per year. 30 credit hours are required in the studio major area: six hours 100-level courses and 24 hours 200-level courses. Additional information is available from the coordinator of the various areas or Divisional Academic Adviser.

To enter the upper division, major area studio courses, the student must complete the four-semester, lower-division program, including at least two semesters (six semester credit hours) of introductory work from the area of intended major.

Lower Division: The two-year, lower-division required sequence of courses in drawing, visual foundations, art orientation, art history, and introductory studio prepares the student for advanced study. Idea development, technical ability, and communication skills are taught with equal emphasis by involving the student in a wide range of problems.

The first year of lower-division instruction offers a broad experience in drawing, design, and art history. Emphasis is on basic skills concepts and the development of a common vocabulary with which student objectives can be clearly defined. In the second year, students have the option of selecting introductory courses from three of the five major studio areas which are most suited to their particular interests. Figure drawing and advanced drawing is also required in the second year.

Lower-division art requirements are as follows:	Hours
Art 11 *Drawing*	3
Art 12 *Drawing*	3
Art 100 *Art Orientation*	1
Art 121 *Visual Foundation*	3
Art 122 *Visual Foundation*	3
Art 105 *Survey of Art*	3
Art 106 *Survey of Art*	3
Art 211 *Drawing*	3
Art 212 *Drawing*	3
Studio Introductory	12
Lower-Division Art **Total**:	37

Upper Division: The third year of study marks the entry into the upper division. The student begins to concentrate in one area of major studio concern, and to direct and apply the basic skills acquired during the first two years of art instruction. Major areas offered by the Division of Art are ceramics, painting, printmaking, graphic design, and sculpture.

During the third and fourth years, the studio major accounts for a minimum of 24 semester credit hours or almost half the credit earned. The remaining credit hours are taken in art history, art electives, and liberal arts.

Upper-division art requirements are as follows:	Hours
Art 200 Studio Major	24
Art 100/200 Art electives	18
Art 200 *Art History*	6
Upper-Division Art **Total:**	48

B.F.A. Liberal Arts Requirements: Liberal arts requirements are defined by WVU. The undergraduate art student must successfully complete a minimum of 39 semester credit hours of liberal arts to qualify for graduation. To satisfy this requirement, the following distribution of liberal arts credits must be achieved:

	Hours
English 1 and 2	6
Math	3
Cluster A (Humanities)	6
Cluster B (Social Sciences)	12
Cluster C (Natural Sciences)	11-12
Liberal Arts **Total:**	38-39

Bachelor of Fine Arts with Certification Option (B.F.A.)

Students wishing certification to teach K-12 in West Virginia must complete competency requirements established by the state in addition to Division of Art B.F.A. degree requirements. Typically, the student's schedule is reviewed with an Art Adviser, the Division Chairperson, or the Art Education Coordinator.

B.F.A. with Certification Curriculum: This variation of the regular B.F.A. program begins after the completion of the freshman year and requires careful selection of both studio and academic courses. With the additional liberal studies and education course requirements, 4 1/2-5 years of school work should be anticipated.

Liberal Arts and Education Requirements: Liberal arts requirements are designed by the certifying agency of the state of West Virginia and WVU. Education requirements are maintained by the state. Undergraduate art students desiring certification should consult with the Art Education Ccordinator to be certain of compliance with certification criteria.

Art (B.F.A.) Suggested Curriculum
Ceramics, Graphic Design, Painting, Printmaking, Sculpture

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 100 Art Orientation	1	Art 12 Drawing	3
Art 11 Drawing	3	Art 106 Art Survey	3
Art 105 Art Survey	3	Art 122 Visual Foundation	3
Art 121 Visual Foundation	3	LSP Cluster B	3
English 1	3	LSP Cluster C	3-4
LSP Cluster C	4		15-16
	17		

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 211 *Drawing*	3	Art 212 *Drawing*	3
Art 100-level studio major*	3	Art 100-level studio major*	3
Art 100-level elective*	3	Art 100-level elective*	3
English 2	3	LSP Cluster B	3
LSP Cluster B	3	LSP Cluster A	3
	15		15

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 200 Studio Major	3	Art 200 Studio Major	6
Art Elective**	6	Art Electives**	6
Art 200 Art History	3	Art 200 Art History	3
LSP Cluster C***	3-4	Mathematics	3
	15-16		15

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 200 Studio Major	6	Art 200 Studio Major	9
Art Elective**	3	Art Elective	3
LSP Cluster A	3	Elective****	3
LSP Cluster B	3		
	15		15

30 credit hours are required in the studio major area: 6 hours 100-level and 24 hours 200-level. Additional information is available from the coordinator of the various areas or Divisional Academic Advisor.

Summary of Requirements:

Studio and art electives (includes Art Orientation)		73 hours
Art History		12 hours
LSP Cluster Requirements (English)		38-39 hours
Electives		3 hours
	Total	126-127 hours

*The total of 12 hours of required 100-level must include 3 of the 5 major studio areas.

**Art electives may be either 100 or 200-level. Two sequential semesters of 100-level courses are prerequisite for 200-level courses in any given area.

***The 12-hour cluster requirement may be fulfilled by one 3-hour and two 4- hour courses; an additional hour would be required elsewhere.

****Electives may be Art History, Studio Art, or other courses offered by other units in the University.

Art Certification Option (B.F.A.) Students wishing certification to teach K-12 in West Virginia must complete competency requirements established by the state in addition to Division of Art B.F.A. degree requirements. B.F.A. degree with certification credit-hour minimum requirements are as follows:

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 11 *Drawing I*	3	Art 12 *Drawing II*	3
Art 105 *Art Survey I*	3	Art 106 *Art Survey II*	3
Art 121 *Visual Foundation I*	3	Art 122 *Visual Foundation II*	3
English I	3	LSP Cluster A or B (History)	3
LSP Cluster C	4	LSP Cluster C	4
Art 100 *Orientation*	1	Physical Education I	1
	17		17

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 211 *Drawing*	3	Art 212 *Drawing*	3
Art 113 *Painting* I	3	Art 130/131 *Printmaking*	3
Art 126 *Sculpture* I	3	Art 140/141 *Ceramics*	3
English II	3	LSP Cluster B (Soc. & A., MDS)	3
LSP Cluster C	3	LSP Cluster B	3
C&I 7	2	LSP Cluster A (Music 30)	3
	17		18

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 100 Studio Major	3	Art 200 Studio Major	6
Art 100/200 Art Elective	3	Art 166 *Art Education*	3
Physical Education II	1	LSP Cluster B (Open)	3
Art 165 *Art Education*	3	Mathematics	3
LSP Cluster A (Literature)	3		
	13		15

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 200 Studio Major	6	Art 200 Studio Major	6
Art 200 Art Elective	3	Art 200 Art History	3
LSP Cluster A (Relig., Phil., Hum., Lingu., FLIT)	3	Reading 222	2
Educational Psychology 103	3	Educational Psychology	3
	15		14

Fifth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 200 *Art History*	3	C&I 104	4
Art 200 *Art Education*	3	C&I 187	6
Art 200 Studio Major	6	C&I 188	6
	12		16
		Total	154-155

*Typical schedule to be reviewed with Art Adviser, Division Chairperson, or Art Education Coordinator.

Bachelor of Art (B.A.) Art Education Curriculum

To qualify for teaching art in the public schools, elementary through secondary level, the student should complete the art education single comprehensive curriculum, Grades K-12. The program features practical experiences which are integrated with a strong studio involvement.

Curriculum Requirements

The B.A. student must complete the stated curricular requirements in order to graduate. The B.A. curriculum includes required and elective studio art courses, required art history courses, and University-established academic (liberal arts) requirements, as well as those courses prescribed by the state to qualify for certification. The first year of instruction is the same for all art majors.

B.F.A. or B.A. Students must complete a sequence of courses in drawing, visual foundation design, and art survey. The second year of the B.A. program includes a number of studio art courses required as competencies by the state, as well as necessary academic and education courses.

B.A. degree credit-hour minimum requirements are as follows:

Studio	45
Art orientation	1
Art history	6
Liberal arts	41-42
Art education and education (including student teaching)	37
Total	130-131

Bachelor of Arts Art Education Curriculum (B.A.)

To complete the B.A. degree program in four years, a student must take from 15 to 18 credit hours per semester, or 30 to 36 credits per year.

Art Education (B.A.) :To complete the B.A. degree program in four years, a student must take from 15 to 18 credit hours per semester, or 30 to 36 credits per year. A typical B.A. degree program which completes degree requirements in four years is as follows:

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 11 *Drawing* I	3	Art 12 *Drawing* II	3
Art 105 *Art Survey* I	3	Art 106 *Art Survey*	3
Art 121 *Visual Foundation* I	3	Art 122 *Visual Foundation* II	3
English I	3	LSP Cluster A or B (History)	3
LSP Cluster C	4	LSP Cluster C	3-4
Orientation	1	Physical Education	1
	17		16-17

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 113 *Painting* I	3	Art 100/200	3
Art 126 *Sculpture* I	3	Art 100/200	3
Art 130 *Printmaking* I ***or*** Art 140 *Ceramics* I	3	Art 131 *Printmaking II* ***or*** fourth studio area	3
LSP Cluster A (Literature)	3	Art 100 ***or*** 200 Elective	3
C&I 7	2	LSP Cluster A (Music 30)	3
English II	3	LSP Cluster B (Soc. & A., MDS)	3
	17		18

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Art 200	3	Art 211 *Drawing II*	3
Art 165 *Art Education*	3	Art 166 *Art Education*	3
Educational Psychology 103	3	Educational Psychology 105	3
LSP Cluster A (Rel., Phil., Human., Lang., Ling.)	3	LSP Cluster C	3
LSP Cluster B	3	LSP Cluster B	3
Physical Education	1	Mathematics	3
	16		18

Fourth Year
(The two senior semesters may be reversed)

First Semester	*Hrs*	*Second Semester*	*Hrs.*
C&I 187	6	Art 200 Art Elective	6
C&I 188	6	Art 200 *Art Education*	3
C&I 104	4	Physical Education	1
	16		12
		Total	130-131

Faculty
Professors
Robert P. Anderson, M.F.A. (Alfred U.). Ceramics.
John D. Clarkson, M.A. (U. Pitt) *Emeritus.*
Urban Couch, M.F.A. (Cranbrook Acad. Art). Director of Art Collections; Painting.
Barbara A. Drainer, Ed.D. (Columbia U.) *Emerita.*
Eve Faulkes, M.F.A. (R.I. Sch. Design). Graphic Design.
Ben Freedman, M.A. (U. Ariz.). Emeritus.
Clifford A. Harvey, B.F.A. (Mpls. C. Art & Des.). Graphic design.
Margaret O. Lucas, D.Ed. (Penn St. U.). Dean. Art education.
Margaret T. Rajam, Ph.D. (U. Mich.). Art history, Italian renaissance.
Bernard Schultz, Ph.D. (U. Pitt.). Chairperson; Art history, Italian renaissance, Modern art, Art theory.

Associate Professors
Carmon Colangelo, M.F.A. (LSU). Printmaking, Graduate adviser.
Victoria Fergus, Ph.D. (Purdue U.). Art education, Undergraduate adviser.
Alison Helm, M.F.A. (Syracuse U.). Sculpture.
William J. Thomas, Ph.D. (Penn St. U.). Art education.

Assistant Professors
Christopher Hocking, M.F.A. (LSU). Drawing, Painting, Printmaking.
Paul Krainak, M.F.A. (North. Ill. U.). Painting.
Sergio Soave, M.F.A. (WVU). 2-D Visual foundations, Printmaking.

Division of Music

Cecil B. Wilson, Ph.D. (Case West. Res. U.). Chair. Musicology, Nineteenth-century music, Orchestration.

Degree Programs
Bachelor of Arts with a major in music
(in cooperation with the College of Arts and Sciences)
Bachelor of Music
Majors or Areas of Emphasis
Performance
Piano (traditional, jazz, piano pedagogy, coaching-accompanying)
Organ
Voice
Band or Orchestra Instrument (emphasis: traditional, jazz, woodwinds)
Music Education (Instrumental emphasis Vocal/general music emphasis)
Music History
Music Theory
Music Composition

The Division of Music has been an important part of the University's cultural and academic life since 1897, when the Division's antecedant, the School of Music, was established. The University has been an institutional member of the National Association of Schools of Music since 1947. The forty-five member music faculty includes internationally-acclaimed artists and scholars who are distinguished teachers as well. The Division is a part of the College of Creative Arts, the center for the visual and performing arts at West Virginia University and in the state of West Virginia.

Mission

The Division of Music, supported by the resources of a comprehensive land-grant university, offers professional preparation for careers in the performance, composition, and teaching of music. It is committed to providing the highest levels of creative, intellectual, and cultural experiences in music to the University, the state, and the region.

Accreditation

The Division of Music and its programs are fully accredited by the National Association of Schools of Music. The music education program is fully accredited by the National Council for Accreditation of Teaching Education and the West Virginia Department of Education.

Career Prospects

If you are interested in a career in music, you have a wide range of potential occupations from which to choose. Most fall into one of three basic categories: performing, composing or arranging, or teaching. To these ends, the Division of Music offers specialized programs in performance (applied music), theory-composition, music history, and music education, all of which lead to the degree of Bachelor of Music. The performance curricula prepare you for the added career option of private studio teaching in the principal performance area. Piano majors in performance may choose an alternative emphasis in pedagogy, accompanying, or jazz. An emphasis in jazz in the performance curriculum for band or orchestra instrument is available. You may aspire to a career in performance as a solo artist or as a member of an ensemble, or to compose or arrange music for performance.When you complete a curriculum in music education, you will have satisfied course requirements to teach both vocal and instrumental music, as well as general music in the elementary and secondary schools, grades K-12. With further study at the graduate level, you may qualify for teaching positions in higher education. Music graduates sometimes pursue interests in such areas as music librarianship, arts management, arts journalism/criticism, or in the music publishing and manufacturing industries, in consulting, editorial, sales, or management positions.

Admission Requirements

You must audition before you can be considered for admission to an undergraduate music program. A test in music fundamentals is also required. Auditions are held in Morgantown throughout the school year and in Charleston and other cities by special arrangement. A tape recording and other supporting material may be submitted when circumstances prevent a visit to Morgantown for this purpose. Dates for auditions and details concerning them are available from the Division of Music. The audition is a preliminary assessment of your potential for success in the program. If you are admitted, your standing is confirmed or revised after the first semester of study. You should own your own instrument under normal circumstances (except for piano). You are expected to own a portable (folding) music stand. If you are a music major, you can change from one music curriculum to another, particularly during the freshman or sophomore years, without great loss of course credit. You are encouraged to explore and follow the curriculum for which you are best qualified and in which you

can expect the greatest success. Evaluation of your work by the Division of Music faculty aids these decisions. If you wish a broader, liberal arts-oriented, non-professional program, you may pursue the Bachelor of Arts (B.A.) degree. The B.A. with a major in music is offered jointly with the College of Arts and Sciences. In addition to the undergraduate program, courses leading to the following graduate degrees are offered: Master of Music, Doctor of Philosophy, and Doctor of Musical Arts.

Music Scholarship Resources

Carolyn and Clifford Brown Music Alumni Scholarships.
Endowed by gifts in memory of the former professor of music, chairman of music education, and assistant dean of the Creative Arts Center, and his wife. Professor Brown was an alumnus of West Virginia University (BS, '33).

Music Faculty Recognition Scholarships.
Endowed by Stuart F. and Stephanie H. Bloch, and by gifts in memory of:
Thomas S. Canning, former professor of music (composition, theory).
Richard E. Duncan, former dean of the School of Music, and founding dean and director of the Creative Arts Center.
Frank E. Lorince, former professor of music, chairman of music theory and history, and acting chair of the Division of Music.
R. Scott Stringham, former associate professor of music (musicology, music appreciation).
Kenneth Wood, former associate professor of music (violin) and director of the University Orchestra.
and in honor of:
Margaret S. Lorince, former professor of music, director of the Music Preparatory Department, and assistant dean of the College of Creative Arts.

Eleanor Tucker Donley Memorial Scholarships.
Endowed by Demain (Donley) Whitesides.
Ida Cope Tait Music Scholarships.
Endowed by a gift from the estate of Alexandra Endsley Brown.
Virginia Holden Wellock Music Scholarships.
Endowed by Virginia Holden Wellock.
Edith Roberts Williams Music Scholarships.
Endowed by Mrs. Williams in memory of her husband.
Morgantown Music Club Scholarships.
Donated by the club from monies raised at the annual Concert Gala.

University Presidential Scholarships in the Arts.
College of Creative Arts Performance Grants.
Performing Arts Scholarships.Supported by the West Virginia University Foundation.
Loyalty Permanent Endowment Fund Scholarships.
Supported by the West Virginia University Alumni Association.
Presser Scholarships, Supported by the Theodore Presser Foundation.

Musical Organizations

Faculty performing groups include the Mountain State Brass Quintet, the Laureate Wind Quintet, and the Baroque Ensemble. A professional resident chamber orchestra includes many faculty among its membership. Student performing groups include a wide range of opportunities in a variety of musical traditions and styles.

The Mountaineer Marching Band of over 300 members is open to all qualified students in the University. Its activities are confined to the first semester, during which time it presents music and marching pageantry at football games and other special occasions. (May be taken for credit.)

The Wind Symphony is a select group of approximately forty wind and percussion players chosen by audition. The ensemble performs music particularly appropriate to its size and special characteristics. (May be taken for credit.)

The Concert Band is open to all qualified WVU students by audition. It performs both traditional and contemporary band music. (May be taken for credit.)

The Varsity Band is open to all qualified WVU students. Activities are confined to the spring semester; it performs at home basketball games and other special events, and functions as a concert band after the basketball season. (May be taken for credit, but does not meet ensemble requirements in music curricula.)

The University Symphony Orchestra is open, by audition, to all students and residents of the community who are proficient in the playing of an orchestral instrument. The repertoire is that of the standard orchestra, with special emphasis on contemporary American music. (May be taken for credit.)

After completing four semesters in one of the bands or the orchestra, especially qualified members of these organizations may continue service in them upon invitation and receive allowances in the form of remission of fees amounting to $30.00 per semester.

The University Choir is an ensemble of forty vocalists selected by audition. The group sings the standard choral repertoire and makes off- campus appearances during the year. (May be taken for credit.)

The University Choral Union is open to all University students and community residents who can satisfactorily sing a part, by audition. This organization offers opportunity to participate in the performance of major choral works. (May be taken for credit.)

The glee clubs are select groups which specialize in the traditional and special repertoire for voices in the soprano-alto or tenor-bass range. (May be taken for credit.)

The Jazz Ensembles are stage bands and smaller combinations of players who perform many original compositions, as well as those from the big band era and from the repertoire of contemporary jazz bands. Membership is by audition. (May be taken for credit.)

The Opera Theatre mounts fully-staged productions of standard operatic repertoire and also presents programs of opera scenes each season. (May be taken for credit.)

The Collegium Musicum is devoted to the performance of music for small vocal or instrumental ensembles, primarily early music. (May be taken for credit.)

A variety of chamber ensembles feature combinations of woodwinds, brass, and string instruments and include the internationally-acclaimed Percussion Ensemble (Percussion '90), the Trombone Ensemble, and the New Music Ensemble.

Bachelor of Music

Students enrolled in the Division of Music have rich opportunities to perform and to take advantage of a wide range of courses throughout the University. It is possible to complete any of the curricula described below in eight regular semesters with careful planning. Students often choose to take advantage of electives, and it is not unusual to take longer to meet degree requirements. Suggested curricular plans are available from the Division. In addition to fulfilling the special requirements indicated below for the appropriate curriculum, you must satisfy the following general requirements.

Proficiency Levels. Before graduation, you must satisfy a specified proficiency level appropriate to the curriculum in your principal performance area, in piano (if piano is not your major instrument), and in voice (if you are an instrumental music education major). A listing of the proficiency levels for each area is available from the Division of Music. The listed repertoire (or works of comparable technical and musical difficulty) for each level must be performed with musical understanding as well as technical mastery in order to satisfy the requirement.

Students who are admitted conditionally must make up deficiencies as soon as possible. Lack of reasonable progress will place you on probation. If, in the judgment of the faculty, it will be impossible for you to complete graduation requirements in a reasonable length of time, your enrollment in the Division of Music will be terminated.

Keyboard Proficiency Examination. In addition to fulfilling the proficiency level requirement in piano indicated in the curriculum, you are required to demonstrate proficiency in keyboard harmony by passing a special examination.

Recital and Concert Attendance. If you are a full-time undergraduate music major and enter as a freshman, you are expected to register for Music 10 *Music Convocation* and to attend ten programs (in which you are not a participant) or appropriate convocations for six semesters in which you are in residence. This requirement is adjusted for transfer students.

Participation in Musical Organizations. Each music major must participate in musical organizations each semester of residence. If you are a scholarship recipient, you may be called upon to render special service (as a participant in particular organizations or ensembles, as a piano accompanist, etc.), as designated by the division chairperson.

Completion of Degree Requirements

You are responsible for being aware of and correctly fulfilling all graduation requirements. You should review the curriculum requirements both before and after every registration period so that errors or omissions will be detected immediately. If you are a transfer student, you must establish transfer credit from other institutions as early as possible in your WVU study—preferably during the first semester of residence. The degree of Bachelor of Music is conferred upon each student who complies with the general regulations of the University concerning degrees, satisfies departmental requirements, including expected proficiency levels, and completes an appropriate curriculum with a minimum overall grade-point average of 2.0 (C). Music education majors must attain a 2.5 average for certification.

Bachelor of Music with emphasis in performance (applied music)

The performance curricula are especially designed for students wishing to prepare themselves as performers or as teachers of a particular instrument or voice. The increased interest of society today in the arts is creating many new opportunities for the professional musician and for the private music teacher.

A student in a performance curriculum should enter as a freshman, having achieved proficiency level 6 in the principal performance area, and must complete proficiency level 10 in that area to be eligible for graduation. In addition to presentation of a senior recital, performance majors also must make three solo appearances on the major instrument in upper-level student recitals or convocations.

Performance majors are encouraged to participate in the division's major performing organizations (Music 100-105). A maximum of eight hours of credit in these organizations will be counted toward the eight-semester ensemble requirement for graduation.

Theory electives may include Music 160, 171, 172, 260, 263, 264, 265, 267, 268.

Performance Curriculum—Piano (Traditional Emphasis)

At least two of the eight semesters of required participation in musical organizations (Music 100-105) must be as a member of a choral group (Music 102 or 105). In addition, with the permission of the coordinator of keyboard studies, up to three of the remaining six semesters of this requirement may be satisfied by enrollment in Music 115 *Chamber Music-Accompanying.*

Required Courses

Music Core (25 Credits)
- Music 10 *Music Convocation* (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting* (2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (56 Credits)
- Music 110 *Piano* (4, 4, 4, 4, 4, 4, 4, 4)
- Music 100-105 *Major Ensemble* (1, 1, 1, 1, 1, 1, 1, 1)
- Music 115 *Chamber Music* (1, 1, 1, 1, 1, 1)
- Music 118-119 *Methods and Pedagogy* (2, 2)
- Music 218-219 *Repertoire* (2, 2)
- Music 299 *Recital* (2)

Additional Music Courses (18 Credits)
- Music 265 *Analysis of Musical Form* (3)
- Music History elective from Music 221-225 (3)
- Music Theory electives (2, 2)
- Music electives (8)

General Studies (38-39 Credits)
- English 1, 2 (3, 3)
- Mathematics (3)
- Cluster A (6; the balance is Music 33-34)
- Cluster B (12)
- Cluster C (11-12)

Total credits required: 137-138

Performance Curriculum—Piano Pedagogy Emphasis

Admission only by approval of the piano faculty.

Required for graduation: proficiency level 9, senior recital, and three performances on upper level recitals.

Required Courses

Music Core (25 Credits)
- Music 10 Music Convocation (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting* (2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (56 Credits)
- Music 110 *Piano* (4, 4, 4, 4, 4, 4, 4, 4)
- Music 100-105 *Major Ensemble* (1, 1, 1, 1, 1, 1, 1, 1)
- Music 115 *Chamber Music* (1, 1, 1, 1, 1, 1)
- Music 118-119 *Methods and Pedagogy* (2, 2)
- Music 218-219 *Repertoire* (2, 2)
- Music 299 *Recital* (2)

Additional Music Courses (22 Credits)
- Music 153 *Music Education* (3)
- Music 200 *Directed Music Studies: Pedagogy Project* (3)
- Music 210 *Piano Class Methods and Materials* (3)
- Music 212 *History of Keyboard Pedagogy and Technique* (3)
- Music 265 *Analysis of Musical Form* (3)
- Music History elective from Music 221-225 (3)

Music Theory electives (2, 2)
General Studies (38-39 Credits)
English 1, 2 (3, 3)
Mathematics (3)
Cluster A (6; the balance is Music 33-34)
Cluster B (12)
Cluster C (11-12)
Total Credits Required: 141-142

Performance Curriculum—Piano (Jazz Emphasis)

Admission only by approval of the piano faculty. (Limited to those students with experience and a demonstrated ability in the area of jazz improvisation.) Required for graduation: proficiency level 9; senior recital (no more than one-half of program consisting of jazz); and three upper level recital performances. Candidates for the degree in performance with piano jazz emphasis will follow the traditional performance piano curriculum with the following change: Only two semesters of Music 102 or 105 are required with the remaining six semesters of participation in musical organizations to be earned in non-piano sections of Music 115 which require a jazz pianist (Jazz Ensemble, Trombone Ensemble, Percussion Ensemble, etc.).

Performance Curriculum—Piano (Coaching/Accompanying Emphasis)

Admission only by approval of the piano faculty. Required for graduation: proficiency level 10 and a senior recital; coach and accompany under supervision: two full voice recitals, one string recital, one recital of another instrument (clarinet, flute, oboe, horn); coach, prepare musically, and accompany in performance two scenes from standard-repertory operas in their original languages (scenes should involve a minimum of two people and have some dramatic development). No solo performances on upper level recitals are required.

Required Courses

Music Core (25 Credits)
Music 10 *Music Convocation* (0,0,0,0,0,0)
Music 31 *Introduction to Music Listening* (1)
Music 33-34 *Music Literature* (3, 3)
Music 51 *Fundamentals of Conducting* (2)
Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
Music 62, 64, 66 *Written Theory* (2, 2, 2)
Music 68 *Analysis of Music* (2)
Performance (60 Credits)
Music 110 *Piano* (4, 4, 4, 4, 4, 4, 4, 4)
Music 100-105 *Major Ensemble* (1, 1, 1, 1, 1, 1, 1, 1)
Music 115 *Chamber Music* (1, 1, 1, 1, 1, 1)
Music 118-119 *Methods and Pedagogy* (2, 2)
Music 218-219 *Repertoire-Piano* (2, 2)
Music 218-219 *Repertoire-Voice* (2, 2)
Music 299 *Recital* (2)
Additional Music Courses (24 Credits)
Music 19 *Introduction to Opera Theatre* (1, 1, 1, 1, 1, 1)
Music 113 *Diction for Singers* (2, 2, 2, 2)
Music 265 *Analysis of Musical Form* (3)
Music History elective from Music 221-225 (3)
Music Theory electives (2, 2)
General Studies (38-39 Credits)
English 1, 2 (3, 3)
Mathematics (3)
Cluster A (6; the balance is Music 33-34)
Cluster B (12)
Cluster C (11-12)
Total Credits Required: 147-148

Performance Curriculum—Organ

In addition to the required proficiency level 10 in organ, this curriculum also requires achievement of proficiency level 5 in piano before graduation. At least six of the eight semesters of required participation in musical organizations (Music 100-105) must be as a member of a choral group (Music 102-105).

Required Courses

Music Core (25 Credits)
- Music 10 *Music Convocation* (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting*(2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (54 Credits)
- Music 110 *Organ* (4, 4, 4, 4, 4, 4, 4, 4)
- Music 110 *Piano* (2, 2, 2, 2)
- Music 100-105 *Major Ensemble* (1, 1, 1, 1, 1, 1, 1, 1)
- Music 118-119 *Methods and Pedagogy* (1, 1)
- Music 218-219 *Repertoire* (1, 1)
- Music 299 *Recital* (2)

Additional Music Courses (20 Credits)
- Music 265 *Analysis of Musical Form* (3)
- Music History elective from Music 221-225 (3)
- Music Theory electives (2, 2)
- Music electives (10)

General Studies (38-39 Credits)
- English 1, 2 (3, 3)
- Mathematics (3)
- Cluster A (6; the balance is Music 33-34)
- Cluster B (12)
- Cluster C (11-12)

Total Credits Required: 137-138

Performance Curriculum—Band or Orchestra Instrument (Traditional Emphasis)

Flute, oboe, clarinet, saxophone, bassoon, horn, trumpet, trombone, euphonium, tuba, percussion, violin, viola, 'cello, and double bass.

Required Courses

Music Core (25 Credits)
- Music 10 *Music Convocation* (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting* (2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (56 Credits)
- Music 110 *Principal Instrument* (4, 4, 4, 4, 4, 4, 4, 4)
- Music 110 *Secondary Piano* (1, 1, 1, 1, 2, 2)
- Music 100 or 103 *Band or Orchestra* (1, 1, 1, 1, 1, 1,1,1)
- Music 115 *Chamber Music* (1, 1, 1, 1)
- Music 118-119 *Methods and Pedagogy* (1, 1)
- Music 299 *Recital* (2)

Additional Music Courses (18 Credits)
- Music 171 *Instrumentation* (2)
- Music 172 *Orchestration and Band Arranging* (2)

Music 265 *Analysis of Musical Form* (3)
Music History elective from Music 221-225 (3)
Music Theory electives (2, 2)
Music electives (4)
General Studies (38-39 Credits)
English 1, 2 (3, 3)
Mathematics (3)
Cluster A (6; the balance is Music 33-34)
Cluster B (12)
Cluster C (11-12)
Total Credits Required: 137-138

Performance Curriculum—Band or Orchestra Instrument (Jazz Emphasis)

Admission is only on approval of the appropriate area faculty, by jury at the end of the freshman year. Required for graduation: proficiency level 10.

The 12 credits of Music 115 can be earned in jazz ensemble (at least two credits), trombone ensemble, percussion ensemble, and small group jazz ensemble (four credits).

Required Courses

Music Core (25 Credits)
Music 10 *Music Convocation* (0,0,0,0,0,0)
Music 31 *Introduction to Music Listening* (1)
Music 33-34 *Music Literature* (3, 3)
Music 51 *Fundamentals of Conducting* (2)
Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
Music 62, 64, 66 *Written Theory* (2, 2, 2)
Music 68 *Analysis of Music* (2)
Performance (62 Credits)
Music 110 *Principal Instrument* (4, 4, 4, 4, 4, 4, 4, 4)
Music 110 *Secondary Piano* (1, 1, 1, 1, 2, 2)
Music 100 or 103 *Band or Orchestra* (1, 1, 1, 1, 1, 1)
Music 115 *Chamber Music* (1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1)
Music 118-119 *Methods and Pedagogy* (1, 1)
Music 299 *Recital* (2)
Additional Music Courses (18 Credits)
Music 171 *Instrumentation* (2)
Music 173 *Jazz Harmony* (2)
Music 213 *Introduction to Jazz Improvisation* (2)
Music 214 *Advanced Jazz Improvisation* (2)
Music 226 *History of Jazz* (3)
Music 273 *Arranging for Small Jazz Ensemble* (2)
Music 274 *Arranging for Large Jazz Ensemble* (2)
Music Theory elective (3)
General Studies (38-39 Credits)
English 1, 2 (3, 3)
Mathematics (3)
Cluster A (6; the balance is Music 33-34)
Cluster B (12)
Cluster C (11-12)
Total Credits Required: 143-144

Performance Curriculum—Woodwinds

If you are a performance major whose major instrument is in the woodwind family and you show strong performance ability on another woodwind instrument, you may qualify for the performance curriculum in woodwinds. Approval for admission to this curriculum will not be given by the woodwind faculty until after the first year of study, at which time you must achieve an appropriate level on three of the five woodwind instruments. In addition to the senior recital (which may be given on more than one instrument), you must present three solo upper-level student recital performances, one on each of the three major instruments.

Proficiency level requirements for this curriculum are:

A primary major woodwind instrument--Proficiency Level 9.
Two secondary major woodwind instruments--Proficiency Level 7.
Two minor woodwind instruments--Proficiency Level 4.
Piano--Proficiency Level 2.

Required Courses

Music Core (25 Credits)

Music 10 *Music Convocation* (0,0,0,0,0,0)
Music 31 *Introduction to Music Listening* (1)
Music 33-34 *Music Literature* (3, 3)
Music 51 *Fundamentals of Conducting* (2)
Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
Music 62, 64, 66 *Written Theory* (2, 2, 2)
Music 68 *Analysis of Music* (2)

Performance (64 Credits)

Music 110 *Principal Performance*-see above-(42)
Music 110 *Secondary Piano* (1, 1, 1, 1)
Music 100 or 103 *Band or Orchestra* (1, 1, 1, 1, 1, 1, 1, 1)
Music 115 *Chamber Music* (1, 1, 1, 1)
Music 118-119 *Methods and Pedagogy* (1, 1)
Music 299 *Recital* (2)

Additional Music Courses (14 Credits)

Music 171 *Instrumentation* (2)
Music 172 *Orchestration and Band Arranging* (2)
Music 265 *Analysis of Musical Form* (3)
Music History elective from Music 221-225 (3)
Music Theory electives (2, 2)

General Studies (38-39 Credits)

English 1, 2 (3, 3)
Mathematics (3)
Cluster A (6; the balance is Music 33-34)
Cluster B (12)
Cluster C (11-12)

Total Credits Required: 141-142

Performance Curriculum—Voice

In addition to the required proficiency level 10 in voice, a student completing this curriculum must also achieve proficiency level 3 in piano before graduation. One year of either Italian, French, or German is required.

Required Courses

Music Core (25 Credits)

Music 10 *Music Convocation* (0,0,0,0,0,0)
Music 31 *Introduction to Music Listening* (1)
Music 33-34 *Music Literature* (3, 3)
Music 51 *Fundamentals of Conducting* (2)
Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)

Music 62, 64, 66 *Written Theory* (2, 2, 2)
Music 68 *Analysis of Music* (2)
Performance (60 Credits)
Music 110 *Voice* (4, 4, 4, 4, 4, 4, 4, 4)
Music 110 *Secondary Piano* (1, 1, 1, 1, 2, 2)
Music 102 or 105 *Choral Ensemble* (1, 1, 1, 1, 1, 1, 1, 1)
Music 19 *Introduction to Opera Theatre* (1, 1, 1, 1)
Music 118-119 *Methods and Pedagogy* (1, 1)
Music 218-219 *Repertoire* (2, 2)
Music 299 *Recital* (2)
Additional Music Courses (18 Credits)
Music 113 *Diction for Singers* (2, 2, 2, 2)
Music 265 *Analysis of Musical Form* (3)
Music History elective from Music 221-225 (3)
Music Theory electives (2, 2)
General Studies (41-42 Credits)
English 1, 2 (3, 3)
Mathematics (3)
Cluster A (9, 6 of which must be one year of French, German, or Italian; the balance is Music 33-34)
Cluster B (12)
Cluster C (11-12)
Total Credits Required: 144-145

Bachelor of Music with majors in theory, composition, music history

Students in these curricula will satisfy the eight semester requirement for participation in a performing organization through registration in Music 100-105, 115, or 239 *Band, Orchestra, Choral Union, University Choir, Chamber Music,* or *Collegium Musicum* with at least four hours being earned in a major performing group (Music 100-105). Majors in these curricula must present two solo performances on the major instrument in upper level recitals before graduation.

Theory or Composition Curricula

An average of at least B in the required freshman and sophomore theory courses (Music 61-68) or the consent of the coordinator of theory-composition is required for continuation in these curricula. A theory or composition major should enter as a freshman having achieved proficiency level 4 on the student's major instrument, and must complete proficiency level 8 on that instrument before graduation. If piano is not the major instrument, proficiency level 4 in this instrument also must be established. If you reach level 4 before earning four credits, the remaining credits are treated as free electives. Piano majors reduce total curricular credits by four. Another language may be substituted for the indicated French, German, or Italian with the approval of the coordinator of theory-composition. The major project (Music 266) must be in theory or composition.

Theory
Required Courses
Music Core (25 Credits)
Music 10 *Music Convocation* (0,0,0,0,0,0)
Music 31 *Introduction to Music Listening* (1)
Music 33-34 *Music Literature* (3, 3)
Music 51 *Fundamentals of Conducting* (2)
Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
Music 62, 64, 66 *Written Theory* (2, 2, 2)
Music 68 *Analysis of Music* (2)

Performance (28 Credits)
- Music 110 *Principal Instrument or Voice* (2, 2, 2, 2, 2, 2, 2, 2)
- Music 110 *Secondary Piano* (2, 2)
- Music 100—105 or 115 (1, 1, 1, 1, 1, 1, 1, 1)

Theory and Composition (29 Credits)
- Music 160 *Composition* (2, 2)
- Music 171 *Instrumentation* (2)
- Music 172 *Orchestration and Band Arranging* (2)
- Music 260 *Upper Division Composition* (2, 2)
- Music 263-264 *Counterpoint* (2, 2)
- Music 265 *Analysis of Musical Form* (3)
- Music 267-268 *Electronic Music* (2, 2)
- Music 200 *Directed Music Studies* (2)
- Music 200 *Directed Music Studies: Teaching Practicum* (2)
- Music 266 *Major Project in Theory* (2)

Additional Music Courses (8 Credits)
- Music 225 *Music of the Twentieth Century* (3)
- Music History elective from Music 221-224 (3)
- Music elective (2)

General Studies (47-48 Credits)
- English 1, 2 (3, 3)
- Mathematics (3)
- Cluster A (15; must include two years of French, German, or Italian; plus three credits in addition to Music 33-34)
- Cluster B (12)
- Cluster C (11-12)

Total Credits Required: 137-138

Composition
Required Courses

Music Core (25 Credits)
- Music 10 *Music Convocation* (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting* (2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (28 Credits)
- Music 110 *Principal Instrument or Voice* (2, 2, 2, 2, 2, 2, 2, 2)
- Music 110 *Secondary Piano* (2, 2)
- Music 100—105 or 115 (1, 1, 1, 1, 1, 1, 1, 1)

Theory and Composition (33 Credits)
- Music 60 *Introduction to Composition* (2, 2)
- Music 160 *Composition* (2, 2)
- Music 171 *Instrumentation* (2)
- Music 172 *Orchestration and Band Arranging* (2)
- Music 260 *Upper Division Composition* (2, 2, 2, 2)
- Music 263-264 *Counterpoint* (2, 2)
- Music 265 *Analysis of Musical Form* (3)
- Music 267-268 *Electronic Music* (2, 2)
- Music 299 *Composition Recital* (2)

Additional Music Courses (8 Credits)
- Music 225 *Music of the Twentieth Century* (3)
- Music History elective from Music 221-224 (3)
- Music elective (2)

General Studies (47-48 Credits)
- English 1, 2 (3, 3)
- Mathematics (3)
- Cluster A (15; must include two years of French, German, or Italian; plus three credits in addition to Music 33-34)
- Cluster B (12)
- Cluster C (11-12)

Total Credits Required: 141-142

Music History Curriculum

A maximum of 16 hours of performance credit (Music 110) will be counted toward the required proficiency level 7 on the major instrument. Level 4 must be achieved on piano if piano is not the major instrument. Piano majors reduce the curriculum by 12 credit hours. A student wishing to substitute a foreign language other than French, German, or Latin may do so only with the consent of the coordinator of music history and literature. The major project (Music 266) must be in music history.

Required Courses

Music Core (25 Credits)
- Music 10 *Music Convocation* (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting* (2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (36 Credits)
- Music 110 *Principal Instrument or Voice* (2, 2, 2, 2, 2, 2, 2, 2)
- Music 110 *Secondary Piano* (1, 1, 1, 1, 2, 2, 2, 2)

(NOTE: Not applicable to piano majors; advanced students receive credit by examination.)
- Music 100—105 *Major Ensemble* (1, 1, 1, 1)
- Music 115 *Early Music Ensemble* (1, 1)
- Music 115 *New Music Ensemble* (1, 1)

Music History (19 Credits)
- Music 200 *Directed Music Studies* (2)
- Music 200 *Introduction to Musical Bibliography* (3)
- Music History electives (from 221-224; 3, 3)
- Music 225 *Music of the Twentieth Century* (3)
- Music 226 *History of Jazz* (3)
- Music 266 *Major Project in Music History* (2)

Additional Music Courses (13 Credits)
- Music 160 *Composition* (2, 2)
- Music 171 *Instrumentation* (2)
- Music 263-264 *Counterpoint* (2, 2)
- Music 265 *Analysis of Musical Form* (3)

General Studies (47-48 Credits)
- English 1, 2 (3, 3)
- Mathematics (3)
- Cluster A (15; must include two years of French, German, or Italian; plus three credits in addition to Music 33-34)
- Cluster B (12)
- Cluster C (11-12)

Total Credits Required: 140-141

Bachelor of Music with a Major in Music Education

Students successfully completing a music education curriculum and all other requirements of the West Virginia Department of Education will be qualified for a professional certificate, grades K-12, and will be eligible for certification to teach instrumental, vocal, and general music in the public schools of West Virginia. For further information, see a music education adviser. In order to qualify for student teaching, a student must have a 2.5 grade- point average in all work attempted, a 2.5 average in education courses (C&I 7; Ed. P. 103, 105) and a 2.5 average in music courses. Students may be called upon to do their student teaching during either semester of the fourth year, and it may be necessary for student teaching to be done outside Monongalia County. Students should plan to provide their own transportation during the student teaching semester. A student following either music education curriculum should begin as a freshman at proficiency level 3 on the student's major instrument and must complete proficiency level 7 on that instrument to be eligible for graduation. The student also must present two solo performances on the major instrument in upper-level recitals before graduation. In addition to the course requirements noted below, competency tests are required in various subjects to complete certification requirements. You should consult a music education adviser for more details.

Music Education Curriculum—Vocal or General Music Emphasis

Students wishing to emphasize preparation in choral music or in general music should choose this curriculum. Those whose major performance area is not voice must complete proficiency level 3 in voice; those whose major instrument is not piano must complete proficiency level 3 in piano.

Music Education Curriculum—Instrumental Emphasis

Students wishing to emphasize preparation in instrumental music (band or orchestra) should choose this curriculum. In performance studies, you must achieve the following proficiency levels: major instrument, level 7; voice, level 1B; piano, level 2. Those whose major performance area is a keyboard instrument or voice must complete proficiency level 4 on a band or orchestra instrument. One semester of marching band required for all wind and percussion players.

Required Courses for Either Curriculum

Music Core (25 Credits)
- Music 10 *Music Convocation* (0,0,0,0,0,0)
- Music 31 *Introduction to Music Listening* (1)
- Music 33-34 *Music Literature* (3, 3)
- Music 51 *Fundamentals of Conducting* (2)
- Music 61, 63, 65, 67 *Aural Theory* (2, 2, 2, 2)
- Music 62, 64, 66 *Written Theory* (2, 2, 2)
- Music 68 *Analysis of Music* (2)

Performance (25-26 Credits)
- Music 110 *Principal Instrument* (2, 2, 2, 2, 2, 2, 2)
- Music 110 *Secondary Piano* (for non-pianists) or Secondary Voice (for pianists) (1, 1, 1, 1)
- Music 100-105 *Major Ensemble* (1, 1, 1, 1, 1, 1, 1)
- Music 115 *Chamber Music* (instrumental emphasis only; 1)

Additional Music Courses (4 Credits)
- Music 52-53 *Advanced Conducting* (2, 2)

Music Education Courses (21 Credits)
- Music Pedagogy: (2, 2, 2, 2, 2)
  - For Instrumental emphasis, Music 44, 45, 46, 47, and Class Voice
  - For Voice/General emphasis, Music 43, 44, 45, 48, and 49

Music 151 *Instrumental Music Education* (3)
Music 152 *Vocal Music Education* (3)
Music 153 *General Music Education* (3)
Music 248 *Music Arranging for Public School Groups* (2)
Education Courses (24 Credits)
Educational Psychology 103, 105 (3, 3)
Curriculum and Instruction 7, 104, 187, 188 (2, 4, 6, 6)
General Studies (41-42 Credits)
English 1, 2 (3, 3)
Mathematics (3)
Cluster A (9; either Art 30 or Theatre 30, an English literature course, a history course; plus Music 33-34)
Cluster B (12, including at least one course in sociology, anthropology, or multidisciplinary studies)
Cluster C (11-12, including one laboratory science)
Total Credits Required: 139-141

Combined Performance/Music Education Curriculum

An optional program can be arranged for outstanding students who desire to meet the requirements of majors in both performance and music education. Admission to this rigorous program is by written consent of the coordinator of the appropriate performance area and the coordinator of music education after the student has completed two semesters. This curriculum satisfies the course requirements of the professional certificate, Grades K-12. The numerous possible combinations of performance with music education cannot be listed separately here. When you become a candidate for this degree, your adviser designates the specific courses which must be taken to satisfy the requirements for both a bachelor's in performance and a bachelor's in music education. By attending summer sessions, if appropriate courses are available, it may be possible to complete the combined curriculum in four calendar years, although it usually takes longer.

Bachelor of Arts Degree

The Bachelor of Arts in music, an interdepartmental curriculum offered by the College of Arts and Sciences and the College of Creative Arts, provides an option if you have an interest in music and you wish to pursue a broader liberal arts education rather than to seek a career as a performer or teacher. To enter this program, you must have the approval of the program adviser, and must meet audition requirements in the principal performance area, which can be piano, organ, voice, or band or orchestra instrument. The flexibility implicit in this program precludes publishing a recommended eight-semester course distribution. Unless otherwise specified, general College of Arts and Sciences and University regulations apply. Three principal areas of course work are required, as shown in the following outline:

A. General Education	*Hr.*
English 1, 2,	6
Math	9
Cluster A, B, C	36
Foreign Language	12
Non-Music Electives	18-25
Minimum: 75	Maximum: 82

No music courses may be included in Cluster A. Of the LSP requirements and non-music electives, at least 24 credit hours must be in Arts and Sciences. Foreign language study is in addition to the Cluster requirement.

International Studies or Minority Studies: Each student must meet this requirement.

Depending upon individual interest, you may select courses from areas which could provide a basis for careers in music librarianship (courses in library science), computer science, music merchandising /arts management (courses in psychology, management, marketing) or music criticism (courses in English, journalism).

B.Musicianship

Theory (Music 61-68)	16
Literature (Music 31, 33, 34WR)	7
Upper-Level Music Electives (in Theory, Composition, History or Literature)	3-6
Total	26-29

C.Musical Performance

Performance (Music 110, major performance area)	16
Concert Organization (Music 100-105) or Ensemble (Music 115)	4
Performance Elective	0-4
Total	20-24

You must attain a proficiency in the major performance area suitable for public performance (at least level 5). Secondary piano proficiency is not required. One solo upper-level appearance and two semesters of Music 10 *Music Convocation* are required. If you do not make satisfactory progress in achieving the performance proficiency level, you will be discontinued.

Summary	**Hr.**
General Education	75-82
Musicianship	26-29
Musical Performance	20-24
Total Minimum—128	

No more than 42 credits in music courses (exclusive of Music 110 *Performance*) may be counted toward graduation. At least 30 credits overall must be at the 100-level or above. A grade-point average of 2.0 is required for graduation.

Faculty

Professors

Peter Amstutz, D.M.A. (Peabody Cons.) Piano

John Beall, Ph.D. (U. of Rochester, Eastman Sch. of Mus.) Composition, Theory

James W. Benner, M.A. (Columbia U.) *Emeritus*

Thomas S. Brown, Ph.D. (Northwestern U.) Coordinator, Music Education; Vocal Music, Appalachian Music

Lawrence Christianson, B.A. (San Diego St. U.) Director of Orchestral Activities; Orchestra, Conducting

Clyde M. English, D.S.M. (Union Theol. Sem.) *Emeritus*

Philip J. Faini, M.M. (WVU). Percussion, African music

Herman Godes, M.M. (Latvian St. Mus. Acad.) *Emeritus*

Joseph A. Golz, M.A. (Columbia U.) *Emeritus*

William P. Haller, D.M.A. (N. Tex. St. U.). F.A.G.O. Organ, Theory

Leo Horacek, Jr., Ph.D. (U. Kans.) *Emeritus*

Barton Hudson, Ph.D. (Ind. U.) Director, Graduate Studies; Musicology, Renaissance music, Harpsichord

Gerald Lefkoff, Ph.D. (Cath. U. Am.) Coordinator, Theory-Composition; Theory, Electronic music, Viola

Margaret S. Lorince, M.M. (Eastman Sch. of Mus.) *Emerita*

James E. Miltenberger, D.M.A. (Eastman Sch. of Mus.) Coordinator, Keyboard

Instruments; Piano, Piano repertoire, Jazz
Augusto Paglialunga, M.M. (New England Conserv.) Artist-in-Residence; Voice
Richard E. Powell, M.Ed. (S.W. Texas St. Col.) Coordinator, Brass/Percussion Instruments; Low Brass Instruments, Pedagogy
George E. Schafer, Ph.D. (Eastman Sch. of Mus.) *Emeritus*
William Skidmore, M.M. (U. Ill.) Coordinator, Strings; Cello, Chamber Music
William Taylor, M.M. (Ind. U.) Coordinator, Voice-Opera; Voice
Gilbert Trythall, D.M.A. (Cornell U.). Composition, Electronic music, Theory.
Don G. Wilcox, M.A. (Cal. St. at Long Beach) Director of Bands; Band, Conducting
Cecil B. Wilson, Ph.D. (Case West. Res. U.) Chair; Musicology, Nineteenth Century Music, Orchestration
Frances Yeend *Emerita*

Associate Professors
Rose M. Crain, *Emerita*
Joyce A. Catalfano, M.M. (Ithaca Col.) Coordinator, Woodwind Instruments; Flute
David Hastings, M.M. (Northwestern U.) Saxophone, Jazz ensemble
Christine B. Kefferstan, D.M.A. (U. Cincinnati) Piano
Bernard R. McGregor, M.F.A. (Carnegie-Mellon U.) *Emeritus*
Alexander Meshibovsky, D.Mus. (Gnessin Institute, Moscow) Violin
Janis-Rozena Peri, M.M. (Miami U.) Voice
Max Peterson, M.A. (U. Iowa) Director of Choral Activities; Choirs, Conducting
June D. Swartwout, M.M. (WVU) *Emerita*
John F. Weigand, D.M.A. (Florida St. U.) Coordinator, Undergraduate Admissions; Clarinet, Chamber Music
Christopher Wilkinson, Ph.D. (Rutgers U.) Coordinator, Music History- Literature; Musicology, Baroque Music, Twentieth-century Music
John Winkler, D.Mus. (Northwestern U.) Trumpet, Chamber music

Assistant Professors
Connie Sturm, Ph.D. (U. Oklah.) Piano, Group piano, Piano pedagogy
David Bess, Ph.D. (WVU) Instrumental Music Education
Barbara Coeyman, Ph.D. (CUNY) Musicology, Baroque music, Collegium Musicum
John E. Crotty, Ph.D. (Eastman Sch. of Mus.) Theory
Cynthia Dewey, M.M. (U. Texas, San Antonio) Voice, Vocal diction and pedagogy
Terry B. Ewell, M.A. (U. Washington) Bassoon, Theory
Robert Fisher, Ph.D. (U. Kansas) Vocal music education
Curtis Johnson, M.M. (WVU) Jazz Studies, Arranging, Saxophone
Jane R. Pestun, M.M. (WVU) Emerita
David Satterfield, M.M. (WVU) Assistant Director of Bands; Percussion
Robert H. Thieme, Jr. M.M. (WVU) Director, WVU Opera Theatre; Opera, Vocal repertoire, Accompanying-coaching
Virginia Thompson, D.M.A. (U. Iowa) Horn, Theory
Peter Velikonja, M.M. (Mannes Coll. Music) Oboe, Theory
Janet Robbins, Ph.D. (Ohio St. U.) General music education

Lecturers
Joel Cotter, M.M. (WVU) Part-Time; Trumpet
Jeanne Frieben, M.M. (WVU) Part-Time; Clarinet
Kevin Frieson. Part-Time; Electric Bass
Catherine Godes, D.M.A. (U. Cincinnati) Part-Time; Coordinator, Community Music Program
Herman Godes, M.M. (Latvian St. Mus. Acad.) Part-Time; Piano
David P. McCollum, M.M. (Duquesne U.) Part-Time; Tuba
Robert Skavronski, M.M. (New England Conserv.) Part-Time; Double bass
Albert J. Wrublesky, M.M. (WVU) Part-Time; Percussion

Division of Theatre

W. James Brown, M.F.A. (U. Wash.). Chair; Theatre design.

Degree Offered:
Bachelor of Fine Arts

Accreditation

The Division of Theatre and its programs are fully accredited by the National Association of Schools of Theatre (NAST).

Nature of Program

The Division of Theatre offers an intensive training program for the student who seeks artistic growth and development. The four-year course of study, leading to the Bachelor of Fine Arts (B.F.A.) degree, is designed for those students who intend to pursue professional theatre careers, as well as those who may enter other fields where theatre skills are desirable.

The theatre major may choose from among several different areas of emphasis, each of which provides a well-rounded knowledge of the art as well as an opportunity to specialize. The various curricula combine formal classes in theory with practical application and experience in the Division's theatre, studio, and shop areas.

Performances

The Division annually produces five major productions as well as laboratory performances in its three performance areas: Concert Theatre, Studio Theatre, and Classroom Theatre. These productions provide practical experience for theatre students and serve as a cultural outlet for the community.

Young People's Theatre: Theatre majors, under the direction of a faculty member, operate a complete puppet theatre program. The Division's Puppet Mobile tours the state from September through April. Creative dramatics and children's theatre are also offered.

Bachelor of Fine Arts in Theatre

Upon entrance, the student must comply with the general regulations of the University concerning degrees, satisfy all entrance and divisional requirements, and complete one of the curricula of the Division of Theatre with a 2.0 (C) grade-point average.

For admission to the junior year of the Division of Theatre, a student must have established a 2.0 (C) grade-point average. Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Theatre.

Students are responsible for correctly fulfilling all requirements. Each student should review the course requirements both before and after every registration period so that errors or omissions will be detected immediately.

Theatre Curricula

Students may select an area of emphasis in acting, design and technical theatre, playwriting/directing/stage management, or creative dramatics/puppetry. Graduates of the Division of Theatre are employed in the professional theatre, radio, television, and film. Others have chosen careers in fashion design, commercial sales, makeup, lighting design, and installation, law and positions in the public arena. Undergraduates are frequently offered graduate student positions with leading University training programs offering MFA study.

Teacher Certification

Although there is no teacher certification with a speciality in theatre, students planning to teach theatre at the high school level will pursue certification in oral communication, which may include course work in theatre.

Acting

The first two years of the program are considered probationary. Admission to the junior year (the studio program) is carefully limited to maintain a nucleus of talented actors with balanced skills and abilities. The studio program is structured as a closed program, open only by invitation from the acting faculty, and from which one may be dismissed.

Acting

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theatre 75	3	Theatre 76	3
Theatre 100 or 105	4	Theatre 95	3
Music 30 or Art 30	3	Theatre 100 or 105	4
Engl. 1	3	Cluster B	3
Cluster B	3	Math.	3
Cluster C	3		
	19		16

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theatre 51	2	Theatre 52	2
Theatre 71	2	Theatre 72	2
Theatre 110	3	Theatre 176	3
Theatre 175	3	Theatre 179	2
Theatre 179	2	Theatre 296 or 298	3
Eng. 2	3	Music 30 or Art 30	3
Theatre 295 or 297	3	Cluster C	3
	18		18

*Third Year**

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theatre 151	2	Theatre 152	2
Theatre 171	2	Theatre 172	2
Theatre 177	3	Theatre 178	3
Theatre 200	3	Theatre 200	3
Theatre 260	2	Theatre 260	2
Theatre 295 or 297	3	Theatre 296 or 298	3
Cluster C	3	Cluster C	3
	18		18

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theatre 180	3	Theatre 252	2
Theatre 251	2	Theatre 260	2
Theatre 260	2	Theatre 272	2
Theatre 271	2	Theatre 276	3
Theatre 275	3	Cluster B	3
Cluster B	3		
	12		15

Creative Dramatics/Puppetry

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 74 or 75	3	Theat. 95	3
Theat. 100 or 105	4	Theat. 100 or 105	4
Art History	3	Music History	3
Eng. 1	3	Music 41	2
Cluster B or C	3	P.E. 43	2
	16	Cluster B or C	3
			17

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 106 or 107	3	Theat. 106 or 107	3
Theat. 110	3	Theat. 179	2
Theat. Elect.	3	Dramatic Lit.	3
Eng. 2	3	Outside Elect.	3
Cluster B or C	3	Math.	3
	15	Cluster B or C	3
			17

*Third Year**

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 179	2	Theat. 260	2
Theat. 180	3	Theat. 282	3
Theat. 200	3	Theat. 296 or 298	3
Theat. 206	3	Theat. Elect.	3
Theat. 295 or 297	3	Lib. Science 203	3
CD&FS 10	3	Cluster C	3
	17		17

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 260	2	Theat. 200	3
Theat. 284	3	Theat. 260	2
Theat. 290	3	Theat. 280	3
Theat. 295 or 297	3	Theat. 296 or 298	3
Outside Elect.	3	Cluster B or C	3
ClusteB or C	17		14

Design and Technical Theatre

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 74	3	Theat. 95	3
Theat. 100 or 105	4	Theat. 100 or 105	4
Art 11 or 121	3	Art 12 or 122	3
Engl. 1	3	Math.	3
Cluster C	3	Cluster C	
	3		
	16		16

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 106	3	Theat. 107	3
Theat. 161	3	Theat. 110	3
Theat. 167	3	Theat. 168	3
Theat. 295 or 297	3	Theat. 205	3
Art 211	3	Theat. 296 or 298	3
Eng. 2	3	Cluster C	3
	18		18

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*Third Year **

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 180	3	Theat. 200	3
Theat. 201	3	Theat. 221	3
Theat. 206	3	Theat. 223	3
Theat. 220	3	Theat. 262	3
Art 200	3	Music 30	3
Cluster B	3	Cluster C	3
	18		18

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 218	3	Theat. 219	3
Theat. 260	2	Theat. 260	2
Theat. 203/267/268	3	Theat. 203/267/268	3
Theat. Elect.	3	Cluster B	3
Cluster B	3	Cluster B	3
	14		14

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Playwriting/Directing/Stage Management

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 75	3	Theat. 76	3
Theat. 100 or 105	4	Theat. 95	3
Art Hist.	3	Theat. 100 or 105	4
Eng. 1	3	Music Hist.	3
Cluster B or C	3	Cluster B or C	3
	16		16

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 106 or 107	3	Theat. 106 or 107	3
Eng. 2	3	Theat. 179	2
Cluster B or C	3	Cluster B or C	3
Math.	3	Cluster B or C	3
Dramatic Lit.	3	Theat. Elect.	3
Theat. Elect.	3	Outside Elect.	3
	18		17

*Third Year**

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 179	2	Theat. 180	3
Theat. 200	3	Theat. 200	3
Theat. 206	3	Theat. 260	2
Theat. 295 or 297	3	Theat. 296 or 298	3
Cluster B or C	3	Cluster B or C	3
Outside Elect.	3	Theat. Elect.	3
	17		17

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Theat. 260	2	Theat. 260	2
Theat. 290	3	Theat. 280	3
Theat. 295 or 297	3	Theat. 291	3
Theat. Elect.	3	Theat. 295 or 296	3
Outside Elect.	2	Theat. Elect.	3
Cluster B or C			3
	16		14

Note: At least three of the 15 credits of theatre electives must be selected from the following courses: Theat. 200—Children's Theatre; Theat. 282; and Theat. 284.

* For admission to the junior year in the Division of Theatre, a student must have established a 2.0 (C) grade-point average. Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Theatre.

Faculty

Professors

Joe E. Ford, M.A. (WVU). *Emeritus*

Frank Gagliano, M.F.A. (Columbia U.). Claude Worthington Benedum Professor. Playwriting

Charles D. Neel, Ph.D. (Cornell U.). Dramatic theory, Criticism, Theatre History & Appreciation

Joann Spenser-Siegrist, M.F.A. (U. Ga.). Puppetry, Creative Dramatics

John C. Whitty, Ph.D. (U. Iowa). Theatre History & Appreciation

Associate Professors

W. James Brown, M.F.A. (U. Wash.). Theatre design

Michelle Guillot, M.F.A. (Yale Sch. Drama). Theatre design

Linda D. Milian, M.F.A. (Rutgers U.). Costuming

Victor McQuiston, M.F.A. (Ohio St. U.). Technical direction

Joseph Olivieri, M.F.A. (Am. Conserv. Theatre). Acting

William J. Winsor, M.F.A. (Ohio St. U.). Theatre Design

Assistant Professors

Natalie Baker, B.F.A. (C.M.U.). Part-time, Voice-Speech.

Jack P. Held, M.A. (U. Calif.). Part-time, Stage Speech/Dialects

Sara Romersberger, M.A. (U. Ill.). Movement, Dance

Michael A. Tortora, M.F.A. (Wayne St. U.). Theatre design

School of Dentistry

W. Robert Biddington, Dean
Harry J. Bianco, Associate Dean
William R. McCutcheon, Associate Dean
James Overberger, Associate Dean
Frank H. Stevens, Assistant Dean
Barbara K. Komives, Chairperson, Department of Dental Hygiene

Degree Offered

B.S. in Dental Hygiene

Admission

To get application and reference forms, please write to the Department of Dental Hygiene, West Virginia University, Morgantown, WV 26506, or to the Office of Admissions, Health Sciences Center, West Virginia University, Morgantown, WV 26506. As soon as possible in the year preceding the year you want to enter the program, you should apply and complete the aptitude tests. Forms for the following year are available in September.

If you have no previous study in higher education, you will apply for admission as a freshman at WVU. You must have a diploma from an accredited high school or preparatory school, and we expect you to have these courses listed on your high school transcript:

English—4 units Algebra—2 units Plane geometry—1 unit
Biology—1 unit Chemistry—1 unit

We pay particular attention to scholastic achievement in science courses. We also expect applicants to rank in the upper one half of their graduating classes.
We require that you take the American College Testing Program examination or the Scholastic Aptitude Test.

We ask for personal references, to be submitted on our reference form. All three references must be sent by the writer of the reference directly to the Department of Dental Hygiene.

The Dental Hygiene Admissions Committee reviews all applications. If you are among the most qualified, we will invite you to come to the campus for a personal interview. You will receive a letter stating the date, time, and place of an interview. Competition for admission to our program is intense, and we give preference to residents of West Virginia.

Degree Completion Program

If you are a registered dental hygienist, we can admit you directly to the Department of Dental Hygiene as a full-time or as a part-time student. To be eligible for the degree completion program, you must have a certificate or associate degree from an accredited dental hygiene program. You can transfer lower division credits (see "Suggested Dental Hygiene Curriculum Plan"). Your acceptance and placement in the program depends upon your academic record and upon the number of spaces available.

When you apply, we ask you to include complete records of previous study. In addition to an official transcript mailed to us by the registrar of your previous school, we ask you to include catalog descriptions of the courses taken. If you are currently enrolled in a certificate or associate degree program, we ask that you include your program of studies. You are responsible for the submission of a complete record package. You can enter the degree completion program twice a year. Applications can be obtained after September 1 of the year preceding application to the program. The *West Virginia University Health Sciences Center Catalog* contains complete information about the program in dental hygiene.

Suggested Dental Hygiene Curriculum

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Orien. 2	1	Biol. 2	3
Engl. 1	3	Biol. 4	1
Cluster A	3	Chem. 12	4
Dent. Lit. 66	1	Oral Anat. 85	3
Math. 3 or 23	3	Nutr. 71	3
Chem. 11	4	Cluster B (Soc. 1)	3
Dent. Hy. 1	2		
	17		17

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Anat. 101	4	Physio. 141	4
Cluster B (Psych. 1)	3	Oral Hist. 90	3
Dent. Hy. 105		Pharmacol. 160	3
Theory & Pract. of Prevent.	2	Dent.Hy. Technics 125	4
Microbiol. 26	4	Eng. 2	3
Cluster A	3	Dent. Nrsg. Technics 120	1
SPA 80	3		19
	18		

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Periodont. 168	1	Periodont. 169	1
Cluster B (Psych. 141)	3	Dent.Hy. 174 *Tchig .Methods*	2
Path. 128	2	Path. 129	3
Dent. Radiol. 152	2	Expanded Functions 161	2
Anesth. 300	1	Cluster A	3
Public Health 172	2	Dent. Health Ed. 150	3
Dent. Materials 160	3	Clin. Dent. Hy. 164	2
Dent. Hy. 162 *Clin. Methods*	2		
Clin. Dent. Hy. 163	2		
	18		16

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Adv. Dent. Hy. Clin. Meth. 204	1	Adv. Clin. Dent. Hyg. 206	3-4
Advanced Clin. Dent. Hy 205	5		
Dent. Hy. Pract. 202	2		
Cluster B	3		
Cluster A	3		

DH Elect. 13-14 hours elective credits in Dental Hygiene during the fourth year.

The curriculum includes 122-123 hours excluding senior electives. A student must remain full-time during each of the eight semesters. 135 credit hours are required to graduate. Three hours are required in Cluster A of B for foreign/minority/gender requirements.

College of Engineering

Curtis J. Tompkins, Ph.D., Dean
John T. Jurewicz, Ph.D., Associate Dean for Academic Affairs and Research
Thomas R. Long, Ed.D., Associate Dean for Academic Affairs

Degrees Offered:

Bachelor of Science in Aerospace Engineering
Bachelor of Science in Chemical Engineering
Bachelor of Science in Civil Engineering
Bachelor of Science in Computer Engineering
Bachelor of Science in Electrical Engineering
Bachelor of Science in Industrial Engineering
Bachelor of Science in Mechanical Engineering

Nature of Program

The College of Engineering programs are administered through five departments: Chemical Engineering, Civil Engineering, Electrical and Computer Engineering, Industrial Engineering, and Mechanical and Aerospace Engineering. Its undergraduate programs are recognized by industry as ranking with the best in the nation. The curricula have been planned to give the student a balanced background in the basic sciences, engineering sciences, engineering analysis, the humanities, and the social sciences. In addition, each curriculum features creative programs in engineering synthesis and design. This blend of science and practice has been developed to give the student the tools to solve today's problems and the background to develop the expertise needed for the future.

The College of Engineering staff uses modern teaching techniques, including programmed material, guest lectures by visiting authorities, and team projects and in-house industrial assignments to provide a breadth of training experiences. Teaching laboratories are equipped with modern instruments, machines, and tools to improve and enrich the student's understanding of engineering principles and problems. Analog and digital computer laboratories and facilities are available for classroom work.

Graduate programs, dedicated to the development of engineering practice, engineering science, and research, are offered in numerous creative specialities. Both master's and doctor's degrees are offered. These exciting programs, where the frontiers of knowledge are explored through study and research, provide an academic environment in which all programs—undergraduate and graduate—are updated constantly to give the student the professional education needed in a technological-scientific society.

EAC/ABET Accreditation

The Accreditation Board for Engineering and Technology (ABET) is recognized by the U.S. Department of Education and the Council on Postsecondary Accreditation (COPA) as the sole agency responsible for accreditation of educational programs leading to degrees in engineering. ABET accomplishes its accreditation mission through one of its commissions, the Engineering Accreditation Commission (EAC). ABET, through its participating bodies (American Academy of Environmental Engineers, American Congress on Surveying and Mapping, American Institute of Aeronautics and Astronautics, Inc., American Institute of Chemical Engineers, American Institute of Industrial Engineers, Inc., American Institute of Mining, Metallurgical and Petroleum Engineers, American Nuclear Society, American Society of Agricultural Engineers, American Society of Civil Engineers, American Society for Engineering Education, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., The American Society of Mechanical Engineers, The Institute of Electrical and

Electronics Engineers, Inc., National Council of Engineering Examiners, National Institute of Ceramic Engineers, National Society of Professional Engineers, Society of Automotive Engineers, Society of Manufacturing Engineers, and Society of Naval Architects and Marine Engineers) is concerned with the enhancement of the status of the engineer and the engineering profession, and the establishment of criteria and standards for accreditation of engineering programs at colleges and universities. All baccalaureate programs, other than computer engineering, which is a new program in the College of Engineering at West Virginia University, are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

Admission

To be eligible for admission to the College of Engineering, all prospective students must be qualified for admission to WVU and present secondary school credits for two units of algebra, one unit of geometry, and 1/2 unit of trigonometry or advanced mathematics. Additional freshman-year admission requirements for West Virginia residents and out-of-state residents, plus special admission policies for transfer students, are noted below:

First-Year Students

All students are required to take the American College Testing Program (ACT) or the Scholastic Aptitude Test (SAT) and have the report of scores sent to the WVU Office of Admissions and Records prior to the admission decision.

West Virginia Residents: To be eligible for admission to the College of Engineering a resident must have either a Standard ACT mathematics score of 24 (SAT 500) or a high school grade-point average of at least 3.0 plus a Standard ACT mathematics score of at least 20 (SAT 450).

Out-of-State Residents: To be eligible for admission to the College of Engineering a non-resident must have a standard ACT mathematics score of 24 (SAT 500) or higher. Since there are a limited number of places in the College of Engineering for out-of-state residents, early application is strongly encouraged.

Admission of General Engineering Students to a Curriculum

Students admitted to the College of Engineering as freshman in the general engineering program are asked to state their first, second, and third choices for a departmental major during the second semester of their freshman year. The College has and will have sufficient capacity to accept into *some* major all students who complete their first year with a GPA of 2.0 or better. Most students will receive their first choice, but each major has a specific capacity, which means that it is possible that some students may not receive their first choice. These students will be encouraged to select one of the other engineering majors. Some may elect to wait until they complete their third semester and try again for their first choice. That option may work if the student's grades improve during the third semester because admission to a major is based primarily upon a student's academic performance in their college as defined below.

Basic Criteria for Admission to a Program

Only general engineering students who have a GPA of 2.0 or better are eligible for admission to a program. Students who have passed five courses: Chemistry 15, English 1, Engineering 1, Engineering 2, and Mathematics 15 will be evaluated for admission to a program based upon their overal GPA, with particular attention to the grades in the above five courses plus all other math, chemistry, and physics courses taken, using the procedure described on the next page.

Priorities for Admission to a Major

Students who meet the basic criteria above will be ranked by GPA and admitted to the major of their choice in decreasing GPA order until that major reaches its capacity. If space is not available in the chosen major, the student may select another engineering major where space is still available or wait and try again at the end of the third semester. In all cases, West Virginia residents will be given preference when equal candidates are being considered. The dean's office may give minority students special consideration for admission to a major.

Procedures

- Students not accepted into their first choice are automatically reviewed for their second and third choices and have the right to accept or reject one of these choices.
- Third semester (not including summer sessions) general engineering students who have not been admitted to a major may enroll in Engineering 1 and/or Engineering 2. They may also enroll in CpE 71, EE 21 and/or 22, IE 140, and MAE 12, 32, and/or 41, provided that they have prior approval from their freshman advisor and/or their proposed major department. However, this does not imply that such a student will be admitted to the major in the future. A program chair may agree to specify the minimum conditions under which such a student will be admitted to that department at the end of the third semester.
- Student records will be evaluated on or about June 15, August 15, and December 30.

Transfer Students

Students who wish to be considered for transfer admission to the College of Engineering from another university, must satisfy both the WVU general requirements and as a minimum have completed Math. 15 and 16 and Chem. 15 and 16 or Physics 11 and 12 (or their equivalents) with an overall 3.0 grade-point average, and a 2.5 grade-point average in math and science.

Engineering courses are open only to students formally admitted to the College of Engineering and those students in other colleges and schools which specify engineering courses as curriculum requirements—provided, in each case, that the students have the specified prerequisite or corequisite subjects. Students in general studies or other programs at WVU who wish to transfer to the College of Engineering are not permitted to enroll in engineering courses prior to being officially accepted as an engineering major.

Applications for transfer student admission to undergraduate programs in the College of Engineering must be received according to the schedule below:

Desired Date of Entry:	Deadline Date for Receipt of Application:
Summer Session or First Semester	Preceding March 15
Second Semester	Preceding November 1

The number of transfer students accepted into the College of Engineering is governed by the enrollment capacities of each of the seven undergraduate engineering programs. First admission priority is granted to those students currently matriculated at WVU and in pre-engineering programs which meet the articulation agreement (Board of Regents Administration Bulletin No. 23) at state colleges and universities within West Virginia; second priority to students enrolled in pre-engineering programs at private institutions located in West Virginia; and third priority to students from other colleges and universities. Within the three categories cited above, preferential admission is in the following order: West Virginia residents, other U.S. residents, and international students. Transfer student records will be evaluated on or about June 15, August 15, and December 30.

College of Engineering

Undergraduate Liberal Studies Program Requirements

All engineering undergraduate students must satisfy the University LSP requirements. They must also satisfy the College of Engineering LSP requirements, which encompass the University rules. These requirements are:

• Each student must complete 12 credits of University-approved Cluster A courses and 12 credits of University-approved Cluster B courses. Cluster C requirements are automatically satisfied by courses required for an engineering degree.

• At least 16 of this total of 24 credits must be from the College of Engineering approved LSP list.

• The 12 credit hours in each cluster must include courses taken in three disciplines; two courses must be successfully completed in the same discipline. If foreign language courses are chosen to fulfill Cluster A requirements, no student may use more than one first semester, elementary or introductory course in any foreign language. Language courses in a student's native language may not be used to fulfill Cluster A requirements.

• No more than one multidisciplinary studies (MDS) course may be used to fulfill the Cluster A requirements.

• No more than three hours of basic ROTC may be used to fulfill either Cluster A or Cluster B requirements.

• Advanced Air Force ROTC students may substitute both AFROTC 105 and 106 for Psych. 1. They may also substitute both AFROTC 107 and 108 for a total of three hours of approved political science. This statement pertains to Air Force ROTC students only. No equivalent agreement exists with the Army ROTC.

• All Cluster A and B courses listed in the current catalog and schedule of courses are approved by the College of Engineering except for those listed below.

• Several University LSP courses are not listed as College of Engineering LSP courses. If students from other colleges or schools who have taken these courses transfer into the College of Engineering, these courses may be considered by the departments and the Provost for Academic Affairs for inclusion as College of Engineering-approved LSP courses on a case-by-case basis.

• Courses listed as independent study or special topics (i.e., those courses for which a full course description is not given) are not approved College of Engineering LSP courses. These courses mayalso be considered by the departments and the Provost for Academic Affairs for inclusion as College of Engineering-approved LSP courses on a case-by-case basis.

Please note that not all Engineering LSP courses in humanities and social sciences are included in the University LSP list.

Liberal Studies Program Courses Not Approved by the College of Engineering

Cluster A : Math. 161.
Philosophy 106.
Any foreign language unless two semesters are completed.

Cluster B : Resource Management 1.
Sociology & Anthropology 152.

Approved 200-Level Courses

No 200-level courses are included in Clusters A, B, and C because they are deemed to be not ordinarily appropriate for the Liberal Studies Program. However, a student may petition to take one 200-level course from the list of approved courses in fulfillment of the LSP requirement for each of the cluster areas. Students must petition the associate dean for academic affairs of the College of Engineering through their advisers for approval. This can be accomplished with the use of a standard course waiver and substitution form filled out by the student, approved by the adviser and the associate dean, and placed in the student's file. At the time of the petition, it will be

decided, on a case-by-case basis, if the course in question is in the College of Engineering's approved category.

Common First-Year Engineering Curriculum

All freshmen who are admitted to the College of Engineering enter the college and not a specific program or department.

First Year Curriculum

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chem. 15	4	Chem.16	4
Math. 15	4	Math.16	4
Engr. 1	3	Engr. 2	3
Engl. 1	3	Physics 11	4
Non-tech. elect.*	3	Non-tech. elect.	3
	17		18

* Non-technical elective LSP courses must consist of 12 hours of Cluster A, 12 hours of Cluster B, and at least two different subjects in each cluster; 16 hours must be LSP courses from the College of Engineering ABET socio-humanities list.

Freshman Program

Migri Prucz, M.S.C.E. (WVU). Assistant Coordinator of Freshman Engineering; Coordinator of Facilities.

Charles E. Wales, P.E., Ph.D. (Purdue U.), Professor of Engineering and Education; Director, Center for Guided Design; Coordinator, Freshman Engineering. Decision-making, Guided design.

Chemical Engineering

Eugene V. Cilento, Ph.D. (U. Cincinnati)—Chairperson. Physiological transport phenomena, Biomedical engineering.

Curriculum in Chemical Engineering

Degree: Bachelor of Science in Chemical Engineering

The chemical engineering curriculum is designed to give graduates a broad background in chemical engineering processes and prepare them to become professional engineers.

Students are prepared for positions in operation, development, design, construction, and management of industrial plants. These industries subject raw materials to chemical and physical changes and produce economically desirable products.

A comprehensive background in basic science, mathematics, and humanities courses is scheduled. Electives are available for specialization in fields such as polymers, nuclear energy, coal conversion, biochemical engineering, and interfacial phenomena. Practical work on design and synthesis is incorporated into all chemical engineering courses.

The senior courses introduce the student to the actual practice of chemical engineering. A comprehensive plant design project provides the core for the senior program. Throughout the year the class work emphasizes reactor design, process dynamics, design of experiments, and professional practice and ethics. Integrated into this program are oral and written technical communications.

To receive a degree of Bachelor of Science in Chemical Engineering, a student must take all of the courses indicated in the chemical engineering curriculum and must attain a grade-point average of 2.0 or better for all required chemical engineering courses. If a course is repeated, only the last grade received is considered in computing this grade-point average. Chemical engineering courses used to satisfy technical or engineering science electives will not be considered in the grade-point average.

This requirement helps assure that the student has demonstrated overall competence in the chosen major.

To complete the B.S. degree program in four years, a student must take approximately 17 credit hours per semester.

A typical B.S. degree program which completes degree requirements in four years is as follows:

Chemical Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math. 15	4	Math. 16	4
Chem. 15	4	Chem. 16	4
Engr. 1	3	Engr. 2	3
Engl. 1	3	Elect. (SS-Hum.)	3
Elect. (SS-Hum.)	3	Phys. 11	4
	17		18

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math. 17	4	Math. 18	4
Chem. 133	3	Chem. 134	3
Chem. 135	1	Chem. 136	1
Phys. 12	4	Ch.E. 38	3
Ch.E. 40	3	Ch.E. 41	3
Engl. 2	3	Elect. (SS-Hum.)	3
	18		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chem. 246	3	Chem. 248	3
Ch.E. 110	3	Chem. 142	1
Ch.E. 111	3	Ch.E. 112	4
Ch.E. 142	4	Ch.E. 145	3
Electives	6	Ch.E. 172	3
	19		17

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Ch.E. 182	4	Ch.E. 183	4
Ch.E. 175	3	Ch.E. 181	1
Ch.E. 180	1	Electives	12
Electives	9		
	17		17

Three hours of lower-division ROTC can count toward Cluster A requirements and three hours can count toward Cluster B requirements. Electives in junior and senior years must be selected to complete requirements of non-technical electives (24 hr.), technical electives (six hr.), Engineering Science electives (six hr.), and an advanced science elective (three hr.). All electives must be selected from a list approved by the Department of Chemical Engineering. A 2.0 grade-point average in required chemical engineering courses is necessary before a student can register for Ch.E. 110, 111, 142, 175, 180, or 182.

Faculty
Professors
Richard C. Bailie, Ph.D. (Iowa St. U.). Biomass pyrolysis, Fluidization, Thermal processes.
Dady B. Dadyburjor, Ph.D. (U. Del.). Catalysis, Reaction engineering, Micellization.
Harold V. Fairbanks, M.S. (Mich. St. U.). *Emeritus.*
Alfred F. Galli, M.S. (WVU) *Emeritus.*
Hisashi O. Kono, Dr. Engr. (Kyushu U.). Fluidization, Powder technology, Reaction engineering.
Edwin L. Kugler, Ph.D. (Johns Hopkins U.). Heterogeneous catalysis, Adsorption, Reaction kinetics, Materials science, Zeolites, Ceramics, Hard metals.

Associate Professors
Joseph A. Shaeiwitz, Ph.D. (Carnegie-Mellon U.). Biochemical separations, Interfacial phenomena, Mass transfer.
Alfred H. Stiller, Ph.D. (U. Cincinnati). Chemistry (physical/inorganic chemistry), Solution chemistry, Coal liquefaction.
Richard Turton, Ph.D. (Ore. St. U.). Gas-solid systems, Fluidization, Kinetics, Thermo dynamics.
Wallace B. Whiting, Ph.D. (U. Calif.—Berkeley). Thermodynamics, Fluid-phase equilibria, Chemical process design.
Ray Y. K. Yang, Ph.D. (Princeton U.). Chemical reaction engineering, Biochemical engineering, Modeling and simulation.
John W. Zondlo, Ph.D. (Carnegie-Mellon U.). Heat transfer, Fluid mechanics, Coal processing.

Civil Engineering

Sam A. Kiger, Ph.D., P.E. (U. Ill). Chairperson. Structures, Structural dynamics, Protective construction, Earthquake engineering, Materials science, Soil/structure interaction.

Curriculum in Civil Engineering
Degree: Bachelor of Science in Civil Engineering

Civil Engineering historically encompassed all engineering endeavors not associated with military activities. Because of its origin and history, civil engineering still embraces a wide variety of technological areas. These include the broad areas of environmental engineering, hydrotechnical engineering, geotechnical engineering, transportation engineering, and structural engineering.

During the course of study, civil engineering students are given a solid grounding in mathematics, physics, and chemistry. Added to this is extensive development of the fundamentals of materials science, environmental, soils, hydrotechnical, structural, and transportation systems engineering. This broad base of knowledge is provided to insure that civil engineers are educated in all branches of the profession and to permit continual learning throughout a professional lifetime. Specialization in one or more of the branches of civil engineering is possible by selection of a sequence of technical electives during the junior and senior years. Throughout the program, each student works with an academic advisor in the selection of electives.

Civil engineers work with problems that directly affect the health and economic vitality of people and communities. These problems include waste disposal, environmental pollution, transportation systems design, water resource development, and the design, construction, and rehabilitation of constructed facilities such as dams, bridges, buildings, and transportation facilities. Thus, the challenges and opportunities for a civil engineer lie in combining technical competence with a human concern for the applications of technology. To help students to understand their role in the community, to be effective in working with design teams involving other engineers and other profession-

als, and to be effective in written and spoken communications, the curriculum attempts to give a meaningful educational experience in the humanities, social studies, English, and economics.

To be eligible for graduation in civil engineering, a student must attain a grade-point average of 2.0 or better for all civil engineering courses attempted, except for those courses in which a grade of W or WU was received. If a course is repeated, only the last grade received is counted in computing the grade-point average and the course credit hours are counted only once. This requirement assures that the student has demonstrated overall competence in the chosen major.

To complete the B.S. degree program in four years, a student must take approximately 17 to 19 credit hours per semester.

A typical B.S. degree program which completes degree requirements in four years is as follows:

Civil Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math.15	4	Math.16	4
Engl.1	3	Engr. 2	3
Engr.1	3	Chem.16	4
Chem.15	4	Physics 11*	4
Non-tech. Elect.	3	Non-tech. Elect.	3
	17		18

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math.17	4	Math.18	4
Phys.12	4	M.A.E. 42	3
M.A.E. 41	3	M.A.E. 43	3
Geol.1	3	C.E.101	4
Engl. 2	3	Non-tech. Elect.	3
	17		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
C.E.110	4	C.E. 132	4
C.E.120	4	C.E. 146	3
C.E.160	3	C.E. 181	3
C.E.195	Cr.	C.E. 195	Cr.
Engl. 208	3	C.E. 260	3
Non-tech. Elect.	3	I. E. 277	3
	17		19

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
C.E. 147	3	C.E. Elect.	3
C.E. 281	3	C.E. 196	1
C.E.196	1	C.E. 271(or C.E. 270)	3
C.E. 270 (or C.E. 271)	3	Math./Sci. Elect.	3
C.E. Elect.	6	Non-tech. Elect.	6
Non-tech. Elect.	3	Eng. Sci. Elect.	3
	19		19

Please see explanatory notes on next page.

*Physics 11 may be delayed until the sophomore year. In its place, select a course from Cluster A or B of the University Liberal Studies Program. See note 4.

1. Civil engineering electives must be 200-level civil engineering courses.

2. Engineering science electives are to be selected from C.E. 220, 240, E.E. 101, M.A.E. 101, 104, or 200.

3. Mathematics/science electives can be any engineering science elective or any of the followiong: Ag.Micro. 141; Biol. 246; Ag.Bio. 210; Chem. 115, 131, 141; Geol. 151, 184, 221, 222; Math. 113, 241, 256, 291; I.E. 113, 281; Stat. 201.

4. The non-technical electives must be selected from Cluster A and Cluster B courses. These courses must be selected so as to meet both the University Liberal Studies Program requirements and the College of Engineering humanities and social science course requirements. Each student shall select a sequence of courses with the cooperation and approval of the adviser so as to constitute a meaningful program of study in keeping with the student's interests and career goals.

Faculty

Professors

Sam A. Kiger, Ph.D., P.E. (U. Ill.). Chairperson. Structures, Structural dynamics, Protective construction, Earthquake engineering, Materials science, Soil/structure interaction.

Samuel G. Bonasso, M.S.C.E. (WVU). Adjunct. Cable transportation, Street engineering, Communication and creativity in engineering.

Edmond B. Collins, M.S.Ag.E. (WVU). Adjunct. Agriculture and forestry in community development.

Ronald W. Eck, Ph.D., P.E. (Clemson U.). Transportation engineering, Traffic, Highways.

James L. Green, P.E., M.S.C.E. (WVU). Adjunct. Environmental engineering, Water treatment, Water quality.

William J. Harman, P.E., M.S.C.E. (WVU). Adjunct. Construction methods, Construction specifications.

W. Joseph Head, Ph.D. (Purdue U.). Waste utilization, Highway and airfield pavements, Concrete.

GangaRao V. S. Hota, Ph.D., P.E. (N.C. St. U.). Mathematical modeling of engineering systems, Bridge engineering, Prefabricated housing.

Charles R. Jenkins, Ph.D. (Okla. St. U.). Water quality, Water treatment, Wastewater treatment.

Larry D. Luttrell, Ph.D., P.E. (Cornell U.). Analysis and design of structures: steel, composite slabs, metal buildings, Case studies of failures.

Michael McCawley, Ph.D. (N.Y.U.). Adjunct. Environmental engineering, Air pollution, Air quality.

Lyle K. Moulton, Ph.D. , P.E.(WVU). *Emeritus.*

John L. Richards, Ph.D., P.E., M.B.A. (U.Il.). Adjunct. Professional management, Engineering decision-making, Transportation policy.

William A. Sack, Ph.D., P.E. (Mich. St. U.). Physical, chemical, biological waste treatment, Industrial waste processing, recovery.

Arthur W. Selders, P.E., M.S.Ag.E. (U. Mass.). Adjunct. Agriculture and forestry extension services.

H. Jayalath Siriwardane, Ph.D. (VPI&SU). Geotechnical engineering/geomechanics, Finite element method, Computer applications.

Associate Professors

Dennis C. Chambers, P.E., M.S.C.E. (WVU). Adjunct. Geotechnical engineering, Construction and materials.

Darrell R. Dean, Jr., Ph.D., L.L.S. (Purdue U.). Land surveying, Mapping, Photogrammetry.

Robert N. Eli, Ph.D., P.E. (U. Iowa). Hydrology, Hydraulics, Computer graphics.
Donald D. Gray, Ph.D., P.E. (Purdue U.). Fluid flow, Computational fluid mechanics.
Ernest S. Moyer, Ph.D. (WVU). Adjunct. Environmental, Aerosols, Organic vapors.
Robert B. Scott, M.S. (Davis & Elkins C.). Adjunct. Environmental engineering, Water resources.
Constantine C. Spyrakos, Ph.D. (U. Minn.). Dynamics of structures, Soil-structure interaction, Numerical methods of analysis (BEM, FEM).
Robert W. Wheeler, M.S.C.E. (WVU). Adjunct. Environmental engineering, Public health, Water supply.
William D. Wyant, M.S.C.E. (WVU). Adjunct. Transportation engineering, Construction methods.

Assistant Professors
John J. Bowders, Jr., Ph.D., P.E. (U. Tex.—Austin). Geotechnical aspects of hazardous waste disposal, Geophysical exploration.
H. L. Chen, Ph.D. (Northwestern U.). Structural dynamics, Structural experimentation, Dynamic soil-structure interaction, Damage in reinforced concrete structures.
Julio F. Davalos, Ph.D. (VPI). Finite element analysis and modelling of structures, Spatial stability investigation, Materials characterization of engineered timber products.
Udaya B. Halabe, Ph.D. (MIT). Non-destructive evaluation and in-situ condition Assessment of structures and materials, Wave propagation, Structural analysis and dynamics.
David R. Martinelli, Ph.D. (U. Md.). Transportation engineering, Engineering economics, Systems analysis, Expert systems.
Brian E. Reed, Ph.D. (SUNY-Buffalo). Environmental engineering, Hazardous waste treatment, Groundwater remediation.
Franklin R. Schutz, M.S., P.E. (NYU). Adjunct. Environmental engineering, Small community wastewater treatment, Technology transfer.
Michael P. Wolcott, Ph.D. (VPI & SU). Adjunct. Agriculture and Forestry, Viscoelasticity, Response of materials in structures, Composite material design.

Electrical and Computer Engineering

Roy S. Nutter, Jr., Ph.D. (WVU). Interim Chairperson. Neural networks, Microprocessor systems, Computer architecture, Expert systems.
Wils L. Cooley, Ph.D. (Carnegie-Mellon U.). Associate Chairperson. Biomedical engineering, Electronics, Design.

Curriculum in Electrical Engineering
Degree: Bachelor of Science In Electrical Engineering

The curriculum in electrical engineering provides the student with a science-based general education in the field. Elective courses are available in the following fields in the junior and senior years: electric power, communications, control, computer engineering, signal processing and electronics.

In the first two years of electrical engineering, course work is limited to those subjects which are essential as preparatory courses for more technical courses in the third and fourth years. Fundamental courses in electrical engineering are introduced in the second year. In the third and fourth years, the curriculum provides advanced instruction through required courses and electives. These electives are included in the curriculum to allow the student to acquire additional depth in the student's selected field of electrical engineering. These technical electives are normally selected from 200-level electrical engineering or computer engineering courses. However, a student with special career objectives can petition the department through his adviser for prior written permission to select technical electives from upper-division course offerings in mathematics, the sciences, or other areas of engineering.

The mathematics/statistics elective is selected from a department-approved list. Students should consult with their advisers to select a course from this list.
To be eligible for graduation in electrical engineering a student must attain a grade-point average of 2.0 or better for all required electrical engineering courses. If a required E.E. course is repeated, only the hours credited and the grade received for the last completion of the course is used in computing the grade-point average. It is important for students to take courses in the order specified as much as possible; all pre- and co-requisites must be observed.

A total of six humanities and social science electives (non-technical electives) and three technical electives must be selected. The humanities and social science electives must be chosen so as to meet University Liberal Studies Program requirements and Accreditation Board for Engineering and Technology accreditation guidelines. To complete the B.S. degree program in four years, a student must take approximately 17 credit hours per semester.

A typical B.S. degree program which completes degree requirements in four years or a **total of 137 hours** is as follows:

Electrical Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chem. 15	4	Chem. 16	4
Engr. 1	3	Engr. 2	3
Engl. 1	3	Math. 16	4
Math. 15	4	*Non-tech. Elect.	3
*Non-tech. Elect.	3	Phys. 11	4
	17		18

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
E.E. 21	3	E.E. 24	3
E.E. 22	1	E.E. 25	1
Cp.E. 71	3	Math. 18	4
Math. 17	4	M.A.E. 42	3
M.A.E. 41	3	Engl. 2	3
Phys. 12	4	*Non-tech. Elect.	3
	18		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
E.E. 124	3	E.E. 126	3
E.E. 127	1	E.E. 128	3
E.E. 140	3	E.E. 130	3
E.E. 151	4	E.E. 135	1
Math./Stat. Elect.	3	E.E. 141	3
*Non-tech. Elect.	3	E.E. 156 & 157	2+1
(or E.E. 158 & 159)	(3+1)		
	17		16 (17)

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Econ. 54	3	Econ. 55	3
E.E. 131	3	E.E. 181	3
E.E. 136	1	*Non-tech. Elect.	3
E.E. 158 & 159	3+1	Tech. Elect.	3
(or E.E. 156 & 157)	(2+1)	E.E. 180	2
Tech. Elect.	3	Tech. Elect.	3
*Non-tech. Elect.	3		
	19 (18)		15

*Non-technical elective LSP courses must consist of 12 hours in Cluster A and six hours in Cluster B. The courses must be chosen in accordance with University Liberal Studies Program distribution guidelines. At least ten hours must be LSP courses from the College of Engineering Approved Cluster List.

Faculty
Professors
Walton W. Cannon, Ph.D. (U. Ill.). *Emeritus.*
Mohammad A. Choudhry, Ph.D. (Purdue U.). Power system control, DC transmission, Stability.
Wils L. Cooley, Ph.D. (Carnegie-Mellon U.). Associate Chairperson. Biomedical engineering, Electronics, Design.
Ali Feliachi, Ph.D. (Ga. Tech.). Large-scale systems, Adaptive control, Power systems.
Edwin C. Jones, M.S.E.E. (U. Ill.). *Emeritus.*
Ronald I. Klein, Ph.D. (U. Iowa). Automatic control, Estimation theory, System identification.
Craig S. Sims, Ph.D. (SMU), Signal processing, Control systems, Estimation theory.
Nelson Smith, Jr., D.Sc. (U. Pitt). Physical electronics, Solid-state devices, Electronics.

Associate Professors
Everette C. Dubbe, B.S.E.E. (S. Dak. St. U.). Emeritus.
Mark A. Jerabek, Ph.D. (Purdue U.). Acoustics, Ultrasonic tomography, Electromagnetics.
Robert L. McConnell, Ph.D. (U. Ky.). Electronic instrumentation, Power control,Design.

Assistant Professors
Charles J. Alajajian, Ph.D. (U. Ill.). Computer-aided design, Filter design, Digital signal processing.
Parviz Famouri, Ph.D. (U. Ky.). Analysis and control of electrical machines, Motor drives, Power electronics.
Alok Kumar, Ph.D. (U. Leeds). Large-scale systems, Estimation theory, Two-dimensional digital signal processing.

Curriculum in Computer Engineering
Degree: Bachelor of Science in Computer Engineering

Computer engineering is a newly recognized area of engineering that emphasizes the analysis, design, and application of computer hardware and software. The curriculum provides the student with general knowledge in the basic areas of electrical engineering and computer science. Electives may be chosen during the junior and senior years from more advanced hardware courses in electrical engineering and software courses in computer science.

Fundamental courses in the computer engineering areas of hardware and software continue through the second year with general fundamental engineering courses included. The third and fourth years in the curriculum concentrate on areas of computer engineering in both software and hardware, with technical electives provided to allow the student to acquire more depth in a preferred area of expertise.

Technical electives should be selected from 200-level courses in electrical and computer engineering or computer science. However, students with special career objectives can petition the department through their advisers for prior written permission to select technical electives from upper-division courses in mathematics, the sciences, or other areas of engineering.

To be eligible for graduation in computer engineering a student must attain a grade-point average of 2.0 or better for all required computer engineering, electrical engineering, and computer science courses. If a required Cp.E, E.E., or C.S. course is

repeated, only the hours credited and the grade received for the last completion of the course is used in computing the grade- point average. It is important for students to take courses in the order specified as much as possible; all pre- and co-requisites must be observed.

A total of six humanities and social science electives (non-technical electives) and two technical electives must be selected. The humanities and social science electives must be chosen so as to meet the University Liberal Studies Program requirements and Accreditation Board for Engineering and Technology accreditation guidelines. To complete the B.S. degree program in four years, a student must take approximately 17 credit hours per semester.

A typical B.S. degree program which completes degree requirements in four years with a total of 150 hours is as follows:

Computer Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chem. 15	4	Chem. 16	4
Engr. 1	3	Engr. 2	3
Engl. 1	3	Math. 16	4
Math. 15	4	Non-tech. Elect.*	3
Non-tech. Elect.*	3	Phys. 11	4
	17		18

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
E.E. 21	3	E.E. 24	3
E.E. 22	1	E.E. 25	1
Cp.E. 71	3	E.E. 56	3
Cp.E. 72	1	E.E. 57	1
Math. 17	4	Math. 18	4
Phys. 12	4	Engl. 2	3
C.S. 15	4	C.S. 16	4
	20		19

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
E.E. 124	3	C.S. 240	4
E.E. 127	1	Cp.E. 112	3
Cp.E. 110	3	Cp.E. 111	1
Cp.E. 111	1	Stat. 201	3
Non-tech Elect.	3	Non-tech. Elect.	3
Engr. Sci. Elect.	3	Non-tech. Elect.	3
Math. 215	3		
	17		16

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Econ. 54	3	Econ. 55	3
Non-tech. Elect.	3	Cp.E. 181	3
E.E. 158	3	C.S.136	3
E.E. 159	1	Tech.Elect.	3
Cp.E. 180	2	Non-Tech. Elect.	3
C.S.256	3		
	15		15

*Non-technical elective LSP courses must consist of 12 hours of Cluster A and six hours of Cluster B. The courses must be chosen in accordance with University Liberal Studies Program distribution guidelines. At least ten hours must be LSP courses from the College of Engineering Approved Cluster List.

Faculty
Professor
Roy S. Nutter, Jr., Ph.D. (WVU). Interim Chairperson. Neural networks, Microprocessor systems, Computer architecture, Expert systems.
Robert E. Swartwout, Ph.D. (U. Ill.). *Emeritus.*
Stuart K. Tewksbury, Ph.D. (U. Rochester). VLSI & ULSI digital electronics, Digital communications, Microprocessor systems.

Associate Professor
Powsiri Klinkhachorn, Ph.D. (WVU). Microprocessor applications, Computer architecture, Binary and non-binary logic.

Assistant Professors
Hany H. Ammar, Ph.D. (U. Notre Dame). Modeling and evaluation of parallel and distributed systems performance and dependability.
Afzel Noore, Ph.D. (WVU). Fault-tolerant computing, Design for testability, VLSI design and testing, Computer architecture, Distributed and parallel processing.
Ernest L. Walker, Ph.D. (N.C. State U.). Communication systems, Signal processing, Computer networks, Statistical communication theory, Stochastic processing, Information and Queueing theory, Network performance analysis and simulation.

Industrial Engineering

Ralph W. Plummer, Ph.D. (WVU). Chairperson.

Curriculum in Industrial Engineering
Degree: Bachelor of Science in Industrial Engineering

Industrial engineering began in the latter part of the nineteenth century through the efforts of such pioneers as Frederick Taylor and Frank and Lillian Gilbreth. These early industrial engineers were concerned with improving the effectiveness of industrial operations. They made remarkable savings possible through the use of motion and time studies and methods analysis. As industry became more complex, with large scale systems, industrial engineers became involved in the design of production facilities using plant layout procedures. They also were developing quality control plans, which are so important today in providing consumer protection in product purchases. As production processes and facilities expanded, the industrial engineer was responsible for developing and managing productive, safe systems. In the late fifties and in the early sixties, the computer became a powerful new tool for use in solving management problems. As the computer became more versatile, the industrial engineer used the computer to solve larger and more complex management problems through such modern management science tools as operations research.

Today's students learn the fundamental engineering principles that have been developed in the past; however, the industrial engineering student increasingly uses the computer to solve industrial and social problems. At the same time, the industrial engineer has become even more involved with the human element of the organization. The industrial engineering area known as ergonomics is concerned with human productivity, health, and safety as they relate to the job and the working environment. The graduating industrial engineer has a versatile degree that can be used in every endeavor of society. Since industrial engineers are involved in more effective management of organizations, they are not limited to any one industry. Many have taken employment in such businesses as hospitals, banks, and virtually every governmental agency. Industries have found that their managers perform better when they possess a blend of technical engineering knowledge plus a background in management. The industrial engineer has an excellent blending of these two fields—technology and management. The top managers of many of our largest organizations are industrial engineers.

The industrial engineering program at WVU devotes considerable attention to the individual needs of the student. The faculty works extensively with students in such areas as communication skills, personal growth and development, and the creation of summer job opportunities. The goal of the department is to develop student strengths in technical abilities, personal development, general education, and practical experience.

To be eligible for graduation with a Bachelor of Science in Industrial Engineering, a student must attain a grade-point average of 2.0 or better for all industrial engineering courses attempted, except for those courses in which a grade of W or WU was received.

To complete the B.S. degree program in four years, a student must take approximately 17 credit hours per semester.

A typical B.S. degree program which completes degree requirements in four years is as follows:

Industrial Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math. 15	4	Math. 16	4
Engl. 1	3	Engr. 2	3
Engr. 1	3	Chem. 16	4
Chem. 15	4	Non-tech. Elect.	3
Non-tech. Elect.	3	Physics 11*	4
	17		18

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math. 17	4	Math. 18	4
Phys. 12	4	M.A.E. 43	3
M.A.E. 41	3	I.E. 277	3
Engl. 2	3	I.E. 113	3
I.E. 20	1	Non-tech. Elect.	3
I.E. 140	3		
	18		16

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Econ. 54	3	Econ. 55	3
I.E. 214	3	I.E. 242	3
M.A.E. 42	3	I.E. 250	3
Ch.E. 105	3	I.E. 260	3
I.E. 281	3	Non-tech. Elect.	3
Non-tech. Elect.	3	I.E. 216	3
	18		18

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
I.E. 291	3	M.A.E. 101	3
I.E. Tech. Elect.	3	I.E. 292	3
E.E. 101	3	I.E. Tech. Elect.	6
E.E. 102	1	M.A.E. 114	3
I.E. 202	2		
I.E. 203	1		
Non-tech. elect.	3		
	16		15

*Physics may be delayed until the sophomore year. In its place select a Cluster A course. The non-technical electives must be chosen so as to meet the University LSP requirements and the ABET guidelines. Before entering the senior design course (I.E. 291 & 292) the students must have completed their math and science requirements in the first and second year plus completed seven of the ten required I.E. courses through the third.

Faculty

Professors

Jack Byrd, Jr., Ph.D. (WVU). Operations research, Production systems, Entrepreneurial studies.

Robert C. Creese, Ph.D. (Penn St. U.). Manufacturing processes/systems, Foundry engineering, Cost engineering.

James O. H. Denny, M.L. (U. Pitt). *Emeritus.*

Robert D. Fowler, M.S.I.E. (Ga. Tech). *Emeritus.*

Wafik H. Iskander, Ph.D. (Tex. Tech U.). Operations research, Simulation, Applied statistics.

L. Ted Moore, Ph.D. (Rice U.). Operations research, Linear programming, Production/ operations management.

Ralph W. Plummer, Ph.D. (WVU). Human factors, System safety, Work measurement, Engineering economy.

Terrence J. Stobbe, Ph.D. (U. Mich.). Ergonomics, System safety, Industrial hygiene.

Curtis J. Tompkins, Ph.D. (Ga. Tech)—Dean. Operations management, Statistical modeling, Strategic planning.

Richard E. Ward, Ph.D. (WVU)—Adjunct. Production systems, Facilities/material handling systems design, Simulation materials handling.

Associate Professors

Rashpal S. Ahluwalia, Ph.D. (Western Ontario U.). Computer integrated manufacturing, Flexible manufacturing, Robotics, Expert systems, Process control and modeling.

Majid Jaraiedi, Ph.D. (U. Mich.). Quality control and applied statistics, Information systems, Human factors.

Assistant Professors

Mitchell Berg, Ph.D. (U. Pitt.). Operations research, Systems engineering.

B. Gopalakrishnan, Ph.D. (VPI). Manufacturing systems engineering, Expert systems.

John T. Jankovic, M.S.P.H. (U. N.C.). Adjunct. Health and safety.

Warren R. Myers, Ph.D. (WVU). Industrial hygiene, Ergonomics, Safety engineering.

Wayne T. Sanderson, M.S. (Cen. Mo. St. U.). Adjunct. Health and safety.

Mechanical and Aerospace Engineering

Donald W. Lyons, Ph.D. (Ga. Tech). Chair. Manufacturing systems engineering, Instrumentation.

Curriculum in Aerospace Engineering

Degree: Bachelor of Science in Aerospace Engineering

Aerospace travel, space exploration, and flight of manned or unmanned vehicles continue to gain significance. Aerospace Engineering is involved with the science and technology of advanced vehicles, including aircraft, rockets, missiles and spacecraft. Although a specialized branch of engineering, it is also diverse. Aerospace technology has expanded to include design and development of new earthbound vehicles such as ground effect machines, hydrofoil ships and high speed rail-type systems.

The aerospace engineering program at WVU is designed to prepare the student for a career in the aerospace industries and in government research and development centers and laboratories, as well as in military mission-oriented agencies. The under-

graduate curriculum also allows the student to prepare for graduate studies in aerospace engineering and in other engineering and nonengineering fields.

The aerospace engineering curriculum includes studies in the disciplines encountered in the design of aerospace vehicles, missiles, rockets, and spacecraft. The undergraduate student studies extensively the basic principles of fluid dynamics, solid mechanics and structures, stability and control, and thermal sciences and propulsion.

The student is involved in both theoretical and experimental studies, and trained to integrate knowledge with practical engineering design. With the breadth and depth of education in aerospace engineering, the student becomes a versatile engineer, competent to work in many areas. The curriculum may serve as a terminal program by incorporating design-oriented courses for technical electives, or it may be used as a preparatory program for advanced study by the selection of science-oriented courses. A blend of theoretical and experimental expertise within the faculty exposes students to real-world problems. Recent projects, such as design, construction, and testing of an STOL (short-takeoff-and-landing distance) aircraft and several wind turbines, illustrate this point.

For those students who plan a career in medicine, dentistry, or related areas, but who desire an aerospace engineering degree before entering the appropriate professional school, certain course substitutions may be made. These substitutions include biology (eight hours) and organic chemistry (eight hours) to be substituted for nine hours of technical electives and three hours of heat transfer. All students must satisfy design course requirements as specified by the Department. This selection will help the student satisfy admission requirements to the professional schools in the health sciences. The aerospace engineering program at WVU is administered by the faculty of the Department of Mechanical and Aerospace Engineering.

Minimum Grade-Point Average Requirement for Graduation (B.S.A.E.)

A requirement for graduation in aerospace engineering is a departmental grade-point average of at least 2.0 in all required mechanical and aerospace engineering departmental courses. If a required M.A.E. course is repeated, only the hours credited and the grade received for the last completion of the course will be counted in computing the student's departmental grade-point average. It is important for students to take courses in the order specified as much as possible; all pre- and co-requisites must be observed.

Aerospace Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math. 15	4	Math. 16	4
Engl. 1	3	Engr. 2	3
Engr. 1	3	Chem. 16	4
Chem. 15	4	Physics 11	4
Non-tech. Elect.	3	Non-tech. Elect.	3
	17		18

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Math. 17	4	Math. 18	4
Physics 12	4	M.A.E. 42	3
M.A.E. 12	3	M.A.E. 43	3
M.A.E. 41	3	M.A.E. 114	3
Engl. 2	3	Non-tech. Elect.	3
	17		16

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
M.A.E. 116	3	M.A.E. 104	3
M.A.E. 140	3	M.A.E. 117	3
M.A.E. 160	3	M.A.E. 146	4
E.E. 103	3	M.A.E. 161	3
E.E. 104	1	M.A.E. 165	2
Non-tech. Elect.	3	Non-tech. Elect.	3
	16		18

Fourth Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
M.A.E. 100	Cr.	M.A.E. 162	3
M.A.E. 115	3	M.A.E. 158	3
M.A.E. 150	3	Tech. Elect.	6
M.A.E. 120	3	Non-tech. Elect.	6
Tech. Elect.	3		
Non-tech. Elect	3		15
	18		

NOTES: Physics 11 may be delayed until the sophomore year and replaced with a course from WVU Liberal Studies Program Cluster A or B.

Non-technical elective LSP courses must consist of 12 hours of Cluster A and 12 hours of Cluster B, and three disciplines in each cluster; 16 hours must be LSP courses on the College of Engineering-approved list.

Two technical electives (six hours) must be selected from the M.A.E.-approved list.

Curriculum in Mechanical Engineering
Degree: Bachelor of Science in Mechanical Engineering

Mechanical engineering is a broad technical discipline. It integrates knowledge of the physical sciences and mathematics for the design, construction and manufacture, testing, analysis, use and operation of a device, a structure, a machine, a process, or a system in service to mankind. Its development parallels the growth of industry. Modern society needs mechanical engineers who have broad and deep training in the fundamentals of engineering and related sciences, and have developed a versatility in analyzing and solving complex problems. The mechanical engineer must not only possess a high level of professional expertise but also have an appreciation for vital human and economic considerations.

Mechanical engineers are problem solvers who are scientifically informed and mathematically minded. The mechanical engineering curriculum prepares students to deal effectively with a broad range of engineering problems rather than with narrow specialties. Graduates find employment in a wide range of industries, government agencies, and educational institutions where they are concerned with many functions: the use and economic conversion of energy from natural sources into useful energy for power, light, heating, cooling, and transportation; the design and production of machines to lighten the burden of human work; the planning and development of systems for using energy machines and resources; the processing of materials into products useful to mankind; and the education and training of specialists who deal with mechanical systems.

While the undergraduate curriculum is sufficiently broad to permit the graduate to select from a wide variety of employment opportunities, it contains sufficient depth to prepare a student to enter a graduate school to pursue an advanced degree. As modern science and engineering become more complex, the desirability of graduate-level preparation is being recognized by most advanced industries and government agencies.

Minimum Grade-Point Average Requirement for Graduation (B.S.M.E.)

A requirement for graduation in mechanical engineering is a departmental grade-point average of 2.0 or better for all required mechanical and aerospace engineering courses. If a required M.A.E. course is repeated, only the hours credited and the grade received for the last completion of the course is used in computing the grade-point average. It is important for students to take courses in the order specified as much as possible; all pre- and co-requisites must be observed.

To complete the B.S. degree program in four years, a student must take approximately 17 credit hours per semester.

A typical B.S. degree program which completes degree requirements in four years is as follows:

Mechanical Engineering

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Engr. 1	3	Engr. 2	3
Math. 15	4	Math. 16	4
Chem. 15	4	Chem. 16	4
Engl. 1	3	Phys. 11*	4
Non-tech. Elect.	3	Non-tech. Elect.	3
	17		18

Second

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
M.A.E. 32	3	M.A.E. 42	3
M.A.E. 41	3	M.A.E. 43	3
Math. 17	4	M.A.E. 140	3
Phys. 12	4	M.A.E. 171	3
Engl. 2	3	Math. 18	4
		M.A.E. 53	1
	17		17

Third Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
M.A.E. 113	3	M.A.E. 132	3
M.A.E. 141	3	M.A.E. 158	3
M.A.E. 144	3	M.A.E. 181	3
M.A.E. 145	1	I.E. 202	2
E.E. 103	3	I.E. 203	1
E.E. 104	1	Non-tech. Elect.	3
Ch.E. 105	3	Non-tech. Elect.	3
	17		18

Fourth

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
M.A.E. 135	3	M.A.E. 184	3
M.A.E. 183	3	Prof. elect.	3
M.A.E. 122	3	E.E. 101	3
Prof. elect.	3	E.E. 102	1
Non-tech. Elect.	3	Non-tech. Elect.	3
Non-tech. Elect.	3	Non-tech. Elect.	3
	18		16

*Physics 11 may be delayed until the sophomore year and replaced with a course from WVU Liberal Studies Program Cluster A or Cluster B. The professional electives (six hr.) are selected by the student with the advice and approval of the adviser. The

course selected should form a clear and consistent pattern according to the career objectives of the student. The professional elective credits must be selected from a list of approved courses in the department. Non-technical elective LSP courses must consist of 12 hours of Cluster A and 12 hours of Cluster B, and at least three disciplines in each group; 16 hours must be LSP courses on the College of Engineering-approved list.

Faculty

Professors

Richard A. Bajura, P.E., Ph.D. (U. N. Dame). Associate Provost for Research. Fluids engineering.
Edward F. Byars, P.E., Ph.D. (U. Ill.). *Emeritus.*
Nigel Clark, Ph.D. (U. Natel, So. Africa). Fluidized bed combustion, Particle dynamics.
Robert Dax, M.S. (C.M.U.). Adjunct. Metal forming, Process modeling.
Russell K. Dean, Ph.D. (WVU). Assistant Vice President for Curriculum and Instruction. Engineering mechanics.
Suren N. Dwivedi, Ph.D. (Birla Inst., India). Manufacturing engineering.
Jerome B. Fanucci, Ph.D. (Penn State). *Emeritus.*
Rory Flemmer, Ph.D. (U. of Natal, So. Africa). Research. Fluidization, Machine vision.
Hasan T. Gencsoy, M.S.M.E. (WVU). *Emeritus.*
Leon Green, Jr., Ph.D. (Calif. Inst. of Tech.). Adjunct. Fuels combustion.
Russell R. Haynes, P.E., Ph.D. (WVU). Adjunct. Engineering design.
Eric K. Johnson, P.E., Ph.D. (U. Wisc.). Heat transfer, Combustion, Thermodynamics, Gas-solid flows.
John T. Jurewicz, Ph.D. (Wash. St. U.). Associate Dean. Experimental fluid mechanics, Gas-solid flows.
John Kuhlman, Ph.D. (Case West. Res. U.). Fluid mechanics.
Thomas R. Long, Ed.D. (WVU). Associate Dean. Engineering design.
John L. Loth, P.E., Ph.D. (U. Toronto). Aerospace systems, Combustion.
Donald W. Lyons, Ph.D. (Ga. Tech.). Chairperson. Manufacturing systems engineering, Instrumentation.
In-Meei Neou, Ph.D. (Stanford U.). *Emeritus.*
Nathan Ness, Ph.D. (Poly. Inst. NY). Emeritus and Visiting. Aerodynamics, Thermodynamics.
G. Michael Palmer, Ph.D. (WVU). Instrumentation, Microprocessor applications.
Augustine A. Pitrolo, B.S.M.E. (WVU). Adjunct. Fossil energy.
Helen L. Plants, P.E., M.S.C.E. (WVU). *Emerita* and Visiting.
Harold Schall, B.S. (C.W. Post Coll.). Adjunct. Quality function deployment.
Robert D. Slonneger, P.E., M.S.M.E. (U. Tex.). *Emeritus.* Thermodynamics, Computer applications.
John E. Sneckenberger, P.E., Ph.D. (WVU). Mechanical design and automation.
William Squire, M.A. (U. Buffalo). *Emeritus.*
Emil J. Steinhardt, P.E., Ph.D. (U. Pitt). Engineering systems design, Energy management.
Richard E. Walters, Ph.D. (WVU). Associate Chairperson. Aerospace engineering.
Donald T. Worrell, P.E., M.S.E. (WVU). *Emeritus.*

Associate Professors

Rodney Anderson, Ph.D. (U. Mo.—Rolla). Adjunct. Aerosol and particle science.
Reda Bata, Ph.D. (U. of Florida). Alternate fuels, Thermal sciences, Engine testing.
Ismail Celik, Ph.D. (U. Iowa). Fluids engineering.
R. Kenton Craven, Ph.D. (U. of Kansas). Research. Research Administration.
Alvin Howell, Ph.D. (WVU). Visiting. Structures, Materials.

Kenneth H. Means, P.E., Ph.D. (WVU). Kinematics, Dynamics and stability, Friction and wear.

Victor Mucino, D.E. (U. Wisc.-Mil.). Engineering design.
John E. Notestein, M.S.M.E. (Purdue U.). Adjunct. Fossil energy.
Jacky Prucz, Ph.D. (Ga. Tech.). Structural dynamics, Composite materials.
George Richards, Ph.D. (Purdue). Adjunct. Combustion, Thermal, Fluid mechanics.
Nithiam T. Sivaneri, Ph.D. (Stanford U.). Aerospace engineering.
Charles Stanley, P.E., Ph.D. (WVU). Bioengineering, Microprocessor applications.
James E. Smith, Ph.D. (WVU). Mechanical design.
Larry D. Strickland, Ph.D. (WVU). Adjunct. Fossil energy.
Wallace S. Venable, P.E., Ed.D. (WVU). Engineering mechanics.

Assistant Professors
Larry Banta, Ph.D. (Ga. Tech.). Robotics, Automation.
Ever Barbero, Ph.D. (VPI). Structural Mechanics, Materials, Constructed facilities.
John R. Etherton, M.S. (Geo. Wash. U.). Adjunct. Mechanical system safety.
Mridul Gautam, Ph.D. (WVU). Research. Fluid mechanics.
Bruce Kang, Ph.D. (U. Wash.). Experimental mechanics.
Harsh Karandikar, Ph.D. (U. Houston). Adjunct. Concurrent engineering design.
Margaret Lyell, Ph.D. (U. So. Calif.). Fluid mechanics.
Gary Morris, Ph.D. (WVU). Multiphase fluid mechanics, Aerodynamics.
Marcello Napolitano, Ph.D. (Okla. St. U.) Aircraft stability and control, Feedback control, Dynamics.
Timothy Norman, Ph.D. (Purdue). Advanced composite materials, Fracture mechanics, Experimental mechanics, Biomechanics.
Wenguang Wang, Ph.D. (WVU). Research. Mechanical design.
Guo Zhang, Ph.D. (WVU). Research. Combustion, Thermal systems.
Yunan Zhuang, M.S. (Bejing Inst. Aeronautics). Visiting. Materials, Finite element analysis.

College of Human Resources and Education

Jane Henry Applegate, Ph.D. (Ohio St. U.). Dean, Professor.
Ernest R. Goeres, Ph.D. (U. Iowa). Associate Dean, Associate Professor.
Perry D. Phillips, Ed.D. (WVU). Associate Dean, Associate Professor.
Katherine C. Lovell, Ph.D. (U. Ore.). Assistant Dean.
John O. Andes, Ed.D. (U. Fla.). Coordinator, Off-Campus Programs and Graduate Services, Professor.

Degree Programs

Bachelor of Science in Elementary Education
Bachelor of Science in Secondary Education
Bachelor of Science in Speech Pathology and Audiology

Nature of Program

The College of Human Resources and Education provides undergraduate programs in elementary and secondary education and in speech pathology and audiology. Degrees in many teaching fields—from early childhood education to secondary school subject areas (see "Degree Programs/Areas of Emphasis")—are offered through our Division of Education. The most modern instructional facilities strengthen the programs provided in speech pathology and audiology.
These undergraduate programs lead to the baccalaureate degree, preparation for graduate work, certification and licensure in teaching, or other specialized careers. A strong liberal arts background is necessary for students to benefit from the college's programs. Our students therefore spend part of their first two years taking such liberal arts courses as literature, economics, history, mathematics, and courses in the natural and physical sciences.

History of the College

In 1891, West Virginia University appointed its first Professor of Pedagogy, and a School of Pedagogy was established in 1895. Within two years, the school had become a department in the College of Arts and Sciences. In 1901, its name was changed from Pedagogy to Education, and twenty-six years later, the University's Board of Governors created the College of Education. Over the next 38 years, the college faculty grew to 51 members, and the building that now houses University High School served as the laboratory school for our programs.

In 1965, WVU President Paul A. Miller moved to create the College of Human Resources and Education, with four divisions: Education, Clinical Studies, Family Resources, and Social Work. By 1969 space had become a problem for the 275 faculty and staff members of the College, who were distributed among ten buildings on campus. Therefore, the college was moved from downtown to the four floors built above the existing Forestry Building on the Evansdale Campus. Later, the HR&E portion of the building was named Allen Hall in honor of noted West Virginia educator James E. Allen, who had been U.S. Commissioner of Education in the 1970s.

Over the years, the College of Human Resources and Education has been reorganized several times to reflect changing needs and goals. At present, the College houses three divisions: Counseling and Clinical Studies, Education, and Foundations. The Rehabilitation Research and Training Center, the Learning Resources Center, the Micro-Computer Laboratory, the Job Accommodation Network, the Speech and Hearing Clinic, the Reading Clinic, and the University Reading Lab are also administered through this College.

Mission

The mission of the College of Human Resources and Education at West Virginia University is to provide sound professional preparation, both undergraduate and graduate, through the programs it offers; to provide leadership, scholarly contributions, and assistance in those professions at the local, state, national, and international

levels; and to contribute to the intellectual, instructional, and societal mission of the University in its internal and external undertakings.

In the human resources programs of the college, we fulfill the mission by preparing professionals for their roles in enabling individuals and groups to move from dependence to independence in learning, living, and working. The emphases are upon enhancement of the emotional, intellectual, and physical aspects of people across all stages of the life span and in a variety of settings: homes, public and private institutions, hospitals, rehabilitation agencies, social agencies, higher education, and private industry.

In the professional education programs of the College, we fulfill the mission by providing the initial, advanced, and continuing preparation of capable, knowledgeable professionals who teach, supervise, evaluate, provide special services, counsel, and administer educational programs. Our central engagement in carrying out these activities is with the public schools, where our goal is to support and enhance effective teaching and sound learning.

Accreditation

West Virginia University is fully accredited for the preparation of teachers by the National Council for the Accreditation of Teacher Education (NCATE) and by the West Virginia State Department of Education. The Doctor of Education (Ed.D.) is the highest degree approved and offered. Students in elementary and secondary education must meet University requirements for admission, retention, and graduation and West Virginia Board of Trustees and Department of Education requirements for teacher certification, as described in this catalog. If you are interested in obtaining teacher certification, you are strongly encouraged to discuss your plans as early as possible with a teacher education advisor.

The program in speech pathology and audiology is fully accredited by the American Speech-Language-Hearing Association (ASHA). Upon completion of the master's degree in this field, students qualify for certification by ASHA and by the West Virginia Board of Education.

Admission

Requirements for admission to the undergraduate programs of the College of Human Resources and Education are listed by program areas in subsequent pages of this catalog.

Freshman

Speech pathology and audiology and teacher education use the standard WVU requirements.

Transfers

Teacher education requires a 2.5 grade-point average in all work attempted for pre-education status. For admission into teacher education, a transfer student must maintain a 2.5 grade-point average in all work attempted and achieve acceptable scores on the required competency tests in reading, writing, mathematics, listening, and computer literacy.

Teacher Education

C. Kenneth Murray, Ph.D., Division Director

Program Purposes and Goals

The curricula for undergraduate teacher education programs at West Virginia University are the products of the cooperative efforts of faculty, students, and practitioners. These groups have engaged in systematic efforts to develop teacher education

programs consistent with the mission of the University, the mission of the College of Human Resources and Education, the requirements of the West Virginia Department of Education, and the recommendations of professional organizations and learned societies.

Teacher education programs at West Virginia University have been designed to meet these purposes:

- To help students become effective teachers.
- To help students understand development, analyze their own values and see how these affect their decisions.
- To develop independent learners with an understanding of how knowledge is generated and acquired.
- To assist students in the development and refinement of their intellectual abilities.
- To help students understand themselves, their society, and their environment.

The goals of the West Virginia University teacher education programs seek to describe the qualifications that represent the end result of undergraduate teacher preparation. Graduates of the programs should have these qualifications:

- A broad liberal arts background.
- Strong subject matter preparation.
- An understanding of the theories of human development and the learning process.
- Proficiency in communication skills.
- Skills in educational techniques.
- Experiences necessary to insure a successful start in teaching.
- An understanding of the professional obligations of a teacher.

Degree Programs/Areas of Emphasis
PROGRAMS FOR UNDERGRADUATE ELEMENTARY EDUCATION
GRADES K-8, Multi-Subjects

All early and middle childhood students must complete requirements for the Multi-Subjects K-8 Program. It is recommended that the professional certificate, grades K-8, be endorsed with an appropriate specialization selected from the following options.

ENDORSEMENTS ATTACHED to MULTI-SUBJECTS

Specializations for Grades 5-8

Consumer and homemaking
French
General science
Language arts
Mathematics
Social studies
Spanish

Specializations for K-12

Mentally Impaired
School library/media

Specializations for Pre K-K

Pre-K-K

PROGRAMS FOR UNDERGRADUATE SECONDARY EDUCATION GRADES K-12, 5-12, 5-8, and 9-12

Students in secondary education may select specializations in the following subjects and grade levels.

Specializations for Grades K-12

- Art
- Music
- Physical education
- School library/media

Specializations in Grades 5-12

- Agriculture (vocational)
- Athletic training
- Consumer and homemaking
- English
- Foreign language
- General science
- Health education
- Mathematics
- Oral communication
- Physical education
- Social studies

Specializations in Grades 5-8

- Consumer and homemaking
- Social studies

Specializations in Grades 9-12

- Biological sciences
- Chemistry
- German
- Journalism
- Physics
- Russian
- Safety studies

Career Prospects

Most students who earn undergraduate degrees in education seek careers as classroom teachers. However, with appropriate graduate education, classroom teachers can also be certified to function in other school roles such as guidance counselor, principal, supervisor of instruction, curriculum director, or superintendent of schools. In addition to school-related positions, a person trained as a classroom teacher has skills and knowledge that can be used in business, industry, and government as a developer and/or implementer of training programs and as an evaluator of programs.

Admission and Retention in Teacher Education

If you are seeking admission into teacher education (elementary or secondary education) you may declare pre-education as your major upon entering the University, or you may do so at any point between your entry and your successful completion of 59 hours of approved University course work. Since formal admission into teacher education cannot occur until after 59 hours have been completed, those students who declare their major earlier are designated pre-education students; those who meet the general requirements described below are designated teacher education students.

General Requirements for Admission into Teacher Education

To be eligible for admission to teacher education, you must:

1. Complete a minimum of 59 hours of approved University course work.

2. Achieve a 2.50 grade-point average (GPA) computed on all approved University work attempted, a 2.50 GPA on work completed in the specialization, and a 2.50 grade-point average with no grade below a C on all work completed in professional education.
3. Achieve an acceptable level of performance (within two attempts), as designated by the State Department of Education and/or the College of Human Resources and Education, on the National Teacher Examination Pre-Professional Skills Tests; speech and hearing test; and microcomputer, speaking, and listening competencies.
4. Submit a written application, including a statement that all general requirements for admission into teacher education have been met.
5. Complete any additional requirements of specific program areas.

Various Admission Statuses

Pre-education status, as noted above, may be achieved by declaring education as a major. It does not constitute admission into the teacher education program, but it is a status that permits you to complete any of the general requirements listed in #3 above. You must achieve an acceptable level of performance on the NTE Pre-Professional Skills Tests (mathematics, reading, and writing) as designated by the WV Department of Education and/or the College of Human Resources and Education prior to enrolling in the professional education methods coursework. You must achieve this acceptable level of performance within two attempts.

You may achieve full admission by meeting all the requirements in #1-5 listed under "General Requirements for Admission into Teacher Education."

If you are a graduate or transfer student, you may be granted provisional status if you meet all of the general admission requirements listed above except those in #3 under "General Requirements for Admission into Teacher Education." Provisional status is granted for no more than one calendar year, and provisional status students are not eligible for student teaching.

Remediation Options

If you do not meet the skill-proficiency requirements listed in #3 under "General Requirements for Admission into Teacher Education," you may choose to avail yourself of the numerous remediation options on campus. These include the Reading and Study Skills Laboratory, the Microcomputer Laboratory, and the Learning Resources Center.

General Retention Requirements

You must maintain a 2.50 grade-point average in all hours attempted, a 2.50 GPA in your area(s) of specialization, and a 2.50 GPA with no grade below a C on all work completed in professional education.

As applicable, you must fulfill any additional requirements within specific program areas. Note, for example, that music has unique requirements.

Graduation/Certification Requirements

To be eligible for recommendation for the degree of Bachelor of Science in Elementary or Secondary Education, you must:

1. Comply with the general regulations of the University concerning entrance, advanced standing, classification, examination, grades, grade- points, etc.
2. Satisfy the following requirements:
   - Complete the required courses and the minimum hours of approved courses in education.
   - Select and pursue subject specializations for the B.S. in Elementary or Secondary Education.
   - Adhere to the patterns prescribed in completing the subject specialization(s).

- Present a minimum of 128 hours of approved college credit. A general average of 2.50, as described under "General Requirements for Professional Certification," must be attained for the total hours. Forty-five of these hours must be upper-division courses.
- Complete 30 hours after enrolling in the program area of curriculum and instruction.
- Be at least 18 years of age and be intellectually, emotionally, physically, and otherwise qualified to perform the duties of a teacher.

General Requirements for Professional Certification

The individual candidate applies for professional certification. To teach in the public schools of West Virginia, you must hold a professional certificate issued by the West Virginia Department of Education. To be eligible to receive a professional certificate, the WVU applicant must:

1. Have met the minimum state requirements.
2. Have met the University degree requirements.
3. Have completed at least 45 hours of upper-division work (WVU standards).
4. Have achieved a grade-point average of at least 2.50:
   - On the total of college credits earned.
   - On the hours earned in professional education.
   - In student teaching supervised by WVU supervisor(s) [includes Performance Assessment].
   - In each subject specialization.
5. Have met state or College of Human Resources and Education requirements on the Pre-Professional Skills Test (only two attempts permitted) and requirements for the content specialization test(s) in the area(s) for which certification is sought.
6. Have complied with the West Virginia Board of Education Regulation for Teacher Certification.
7. Have been recommended for certification by the Dean of the College of Human Resources and Education.
8. Be a U.S. citizen.

West Virginia Board of Education Regulation for Teacher Certification

The West Virginia Board of Education requires that 100 of the 128 semester hours required for certification shall be completed in regularly scheduled campus courses. The 28 hours of permissible nonresidence courses may be earned by off-campus study, home study (correspondence), radio, television, special examination, and/or military service.

Reciprocal Certification Agreements

West Virginia, at the time of this publication, has reciprocal agreements with certain other states for teacher certification. Inquiries about reciprocity should be directed to the Office of Student Advising and Records, 509 Allen Hall.

Calculation of Grade-Point Averages

The West Virginia State Department of Education's system of calculating grade-point averages for certification purposes differs in some respects from the WVU system. For certification, all course work attempted at WVU and at other institutions of collegiate rank will be considered. If a student earns a grade of D, F, or U in any course taken no later than the term when he or she has attempted a total of 60 hours, and the student repeats this course, the second grade earned will be used in determining the grade-point average. The first grade will be disregarded.

The Division of Education uses the West Virginia State Department of Education system of calculating grade-point averages only for admission to Teacher Education programs, admission to student teaching, and for assessing teaching field and education averages. Academic performance and eligibility for graduation are assessed by the system used by WVU and Board of Trustees institutions.

Planning a Course of Study

Assistance in planning a course of study to meet degree and certification requirements for elementary and secondary education is available upon request in the Teacher Education Advising Center, 601 Allen Hall. If you plan to become a teacher, you should arrange a planning conference with an advisor from this office before the end of your second year of study.

Faculty

Professors

C. Kenneth Murray, Ph.D. (Ohio St. U.). Division Director. Social studies education, Economic education, Teacher behavior.

John L. Carline, Ph.D. (Syracuse U.). Curriculum, Teacher behavior, Interpersonal relations.

J. William Douglas, Ph.D. (Ohio St. U.). Dean, School of Physical Education. Management theory, History and philosophy of sport.

Marilyn Fairbanks, Ed.D. (WVU). Emeritus.

Boyd D. Holtan, Ed.D. (U. Ill.). Mathematics education, Instructional strategies, Microcomputer education.

Ronald V. Iannone, Ed.D. (Syracuse U.). Creative drama, Aesthetic education, Alternative education.

Robert L. Kurucz, Ph.D. (Ohio St. U.). Adjunct. Sport and exercise study, Exercise physiology.

Layle D. Lawrence, Ph.D. (LSU). Secondary agricultural education, Youth organization, Extension education.

Roy A. Moxley, Ph.D. (U. Mich.). Early childhood education, Early literacy, Educational technology.

Patricia A. Obenauf, Ed.D. (U. Va.). Curriculum development, Science education, Conceptual models.

Patricia K.Smith, Ed.D.(WVU). Recreational reading,Clinical reading,Language arts.

Charles Wales, Ph.D. (Purdue U.). Adjunct. Thinking skills, Decision making and guided design.

Associate Professors

W. Scott Bower, Ph.D. (Ohio St. U.). Teaching strategies, Curriculum development, Teacher effectiveness.

Ardeth M. Deay, Ph.D. (Cornell U.). Classroom organization and management, Rural women in education, Peace education.

Sandra Bradford DeCosta, Ed.D. (WVU). Early childhood education, General methods of education, Multicultural/global education for teachers.

Stacy A. Gartin, Ph.D. (Ohio St.U.). Adult agricultural education, Communications, Leadership development.

Mary E. Haas, Ed.D. (Ind. U.). Social studies education, Geographic education, Global education.

Perry D. Phillips, Ed.D. (WVU). Associate Dean. Social studies education, Teacher education.

W. Michael Reed, Ed.D. (VPI&SU). Coordinator, Microcomputer Lab. Microcomputer education, English education, Cognition and writing.

Steven D. Rinehart, Ed.D. (WVU). Reading education, Language arts, Teacher education.

Assistant Professors

Mary Alice Barksdale-Ladd, Ed.D. (VPI&SU). Reading education, Reading anxiety, Cognition.

Michael A. Caruso, M.A. (WVU). Teacher education certification.

Jeanne Gerlach, Ed.D.(WVU). English education, Writing as learning, Collaborative writing.

Betsy M. Hobbs, Ed.D. (WVU). Content area reading, Reading motivation— children's literature, Experiential programs for adult learners.

Nancy Hoffman, Ed.D. (Penn St. U.). Supervision, Staff development, Effective teaching.

Kerry S. Odell, Ph.D. (Ohio St. U.). Research methodology, Microcomputer applications, Teaching methods.

Steven D. Rinehart, Ed.D. (WVU). Reading education, Language arts, Teacher education.

Joy F. Saab, Ed.D. (WVU). Early childhood, Creative arts, Foxfire.

Farella E. Shaka, Ed.D. (WVU). Science education K-12, Science education research.

Karen F. Thomas, Ph.D. (U. Pitt). Language/Literacy education, Reading, Language arts.

Jody Messinger Wolfe, Ed.D. (WVU). Research. Social studies education, Curriculum, Teacher thinking, Teacher education.

Lecturer

Emma Swain, Ph.D. (Duke U.). Director, University Reading Lab. Remedial reading, Diagnostic services, Teacher education.

Programs for Elementary Education

MULTISUBJECTS GRADES K-8

(130 Semester Hours Required)

	Req.Sem. Hr.	
GENERAL STUDIES REQUIREMENTS (K-4 and 5-8)		**80**
General		**22**
Engl. 1 *Composition and Rhetoric**	3	
Engl. 2 *Composition and Rhetoric**	3	
L. Sci. 203 *Literature for Children*	3	
Music 41 *Fundamental Music Skills*	2	
Music 42 *Teaching Elementary School Music*	2	
Hl. Ed. 101 *Elementary School Health Program*	2	
G.P.E. 41 *Movement Education and Rhythms*	1	
G.P.E. 42 *Elementary Sports Skill*	1	
P.P.E. 43 *Physical Education for Elementary Teachers*	2	
Art 3 *Materials and Procedures*	3	
CLUSTER A Humanities and Fine Arts		**18**
Engl. 35 *Poetry and Drama** or		
Engl. 36 *Short Story and Novel**	3	
Cluster A elective*	3	
Hist. 1 *Western Civilization: Antiquity to 1600** **or**		
Hist. 179 *World History to 1500**	3	
Hist. 52 *American History to 1865**	3	
Hist. 53 *American History 1865 to Present**	3	
Hist. 153 *West Virginia History*	3	

CLUSTER B Social and Behavioral Sciences 12
Soc. & A. 5 *Introduction to Anthropology** or
Soc. & A. 51 *World Cultures** 3
Cluster B elective* 3
Cluster B elective* 3
Cluster B elective* 3

CLUSTER C Natural Sciences and Math 27
P. Sci. 1 *Introductory General Course* 4
P. Sci. 2 *Introductory General Course* 4
Biol. 1 *General Biology** and Biol. 3 *General Biology Lab** **or**
Biol. 2 *General Biology** and Biol. 4 *General Biology Lab** 4
Math. 33 *Introductory Mathematics for Elementary Teachers* 3
Math. 34 *Introductory Mathematics for Elementary Teachers* 3
Math. 131 *Algebra and Geometry for Elementary Teachers** 3
Geog. 7 *Physical Geography** **or**
Geog. 2 *World Regions* 3
Cluster C elective* 4

Students who select the social studies specialization for grades 5-8 must take Geography 2 and History 179. (Geog. 2 does not meet Cluster C requirement.)

*Meets University Liberal Studies Program requirements.

PROFESSIONAL EDUCATION 50

General 20
C&I 7 *Introduction to Education* 2
Ed.P. 103 *Human Development and Learning* 3
Ed.D. 105 *Human Growth and Development* 3
C&I 120 *Elementary Early/Middle Childhood Language Arts* 3
Rdng. 221 *Developmental Reading* 3
C&I 210 *Early Childhood Education 1* 3
C&I 211 *Early Childhood Education 2* 3

Pre-Student Teaching Block 15
C&I 100 *Elementary Early/Middle Childhood General Methods* 3
C&I 130 *Elementary Early/Middle Childhood Mathematics* 3
C&I 140 *Elementary Early/Middle Childhood Science* 3
C&I 150 *Elementary Early/Middle Childhood Social Studies* 3
Rdng. 240 *Corrective Language Arts Techniques* 3

Student Teaching Semester 15
C&I 187 *Student Teaching Elementary Early Childhood* **and** 12
C&I 280 *Special Problems: Student Teaching Seminar* **or** 3
C&I 187 *Student Teaching Elementary Early Childhood* **and** 6
Sp. Ed. 280 *Student Teaching Clinical Experience: Special Education* **and** 6
C&I 280 *Special Problems: Student Teaching Seminar* 3

SPECIALIZATION FOR EARLY EDUCATION Pre-K-K ENDORSEMENT ON K-8 MULTI-SUBJECTS

Required Courses 20-21
CDFS 112 *Toddler and Preschool Development* 3
CDFS 216 *Child Development Practicum* 3-4
C&I 210 and 211 *Early Childhood Education** 6
C&I 214 *Creative Experiences in Early Childhood* **or**
Theat. 282 *Creative Dramatics* 3
G.P.E. 40 *Early Childhood Activities* 2
SPA 250 *Speech-Language-Hearing: Development-Disorders* 3

*Required for Multi-Subjects Program.

SPECIALIZATION FOR GRADES 5 THROUGH 8
FOREIGN LANGUAGES GRADES 5-8

French Grades 5-8
Required Courses **27**

Frch. 1, 2 *Elementary French* 6
Frch. 3, 4 *Intermediate French* 6
Frch. 103, 104 *Advanced French* 6
Frch. 217 *French Civilization* **or**
Frch. 292 *Pro-Seminar: French Culture* 3
Frch. 231 *Pronunciation and Phonetics* 3
Lang. 221 (C&I 125) *The Teaching of Foreign Languages* 3

Spanish Grades 5-8
Required Courses **27**

Span. 1, 2 *Elementary Spanish* 6
Span. 3, 4 *Intermediate Spanish* 6
Span. 103, 104 Advanced Spanish 6
Span. 116 *Spanish Civilization and Culture* 3
Span. 292 *Pro-Seminar: Latin American Culture* 3
Lang. 221 (C&I 125) *The Teaching of Foreign Languages* 3

HEALTH EDUCATION Grades 5-12
To be combined with another teaching field)

Required Courses **31**

Hl. Ed. 50 *History and Philosophy of Health Education* 3
Hl. Ed. 70 *Health of the Individual* 3
Hl. Ed. 71 *Health in the Community* 3
Hl. Ed.104 *Organization and Administration of the School Health Program* 3
Hl. Ed. 220 *Drug and Alcohol Abuse Prevention* 3
Saf. S. 70 *First Aid and Emergency Care* 3
Biol. 166 *Human Physiology* **or**
S.E.S. 165 *Physiology of Motor Activities* 3
Psychology 141 *Introduction to Human Development* 3
HN&F 71 *Introduction to Human Nutrition* 3
Hl. Ed. 101 *Elementary School Health Program* 2
Hl. Ed. 102 *Secondary School Health Program* 2

HOME ECONOMICS (Consumer and Homemaking) Grades 5-8

Required Courses **34**

Tx&Cl 124 *Apparel Construction and Fitting* 3
Tx&Cl 27 *Introductory Textiles* 3
Tx&Cl 121 *Clothing for the Family* 3
HN&F 55 *Food Principles and Practices* 4
CD&FS 112 *Toddler and Preschool Development* 3
CD&FS 211 *Middle Childhood-Early Adolescent Development* 3
HM&FE 161 *Family Economics* 3
ID&H 33 *Housing Design* 3
HN&F 71 *Introduction to Human Nutrition* 3
H.E.Ed. 278 *Vocational Home Economics* 3
H.E.Ed. 175 *Methods of Teaching Home Economics* 3

LANGUAGE ARTS Grades 5-8

Required Courses **40**

Engl. 1 *Composition and Rhetoric** 3
Engl. 2 *Composition and Rhetoric** 3
Engl. 35 *Poetry and Drama* **or**
Engl. 36 *Short Story and Novel** 3
Rdng. 221 *Developmental Reading** 3
L. Sci. 203 *Literature for Children** 3
Engl. 111 *The English Language* 3
Engl. 170 *Modern Literature 1* 3
Engl. 171 *Modern Literature 2* 3
L. Sci. 205 *Young Adult Literature* **or**
Engl. 294 *Fiction for Adolescents* 3
Rdng. 240 *Corrective Language Arts Techniques** 3
Engl. 295 *Approaches to Teaching Composition* 3
C&I 224 *Approaches to Teaching Language* 2
C&I 225 *Approaches to Teaching Literature* 2
C&I 120 *Elementary-Early Childhood Language Arts** 3

*Required for Multi-Subjects Program.

MATHEMATICS Grades 5-8

Required Courses **22-24**

C&I 337 *Mathematics in the Junior High School* 3
Math. 33 *Introductory Mathematics for Elementary Teachers** 3
Math. 34 *Introductory Mathematics for Elementary Teachers** 3
Math. 131 *Algebra and Geometry for Elementary Teachers** 3
Math. 226 *Mathematical Statistics* 3
Math. 128 *Introduction to Calculus* 3
Math. 14 *Pre-Calculus Mathematics* **or** 4
Math. 3 *College Algebra* **and** 3
Math. 4 *Plane Trigonometry* 3

*Required for Multi-Subjects Program.

SCHOOL LIBRARY MEDIA Grades K-12

Required Courses **24**

L. Sci. 201 *Reference and Bibliography* 3
L. Sci. 203 *Literature for Children** 3
L. Sci. 205 *Young Adult Literature* 3
L. Sci. 222 *Field Practice* 3
L. Sci. 223 *Cataloging for Classification* 3
L. Sci. 250 *Managing School Library Media Centers* 3
L. Sci. 291 *Advanced Studies* 3
T.E. 372 *Development of Instructional Materials* 3

*Required for Multi-Subjects Program.

SCIENCE Grades 5-8 (minimum)

Required Courses **24**

P. Sci. 1 *Introductory General Course** 4
P. Sci. 2 *Introductory General Course** 4
Biol. 1 *General Biology* and Biol. 3 *General Biology Lab** 4
Biol. 2 *General Biology* and Biol. 4 *General Biology Lab* 4
Geol. 1 *Physical Geology* 3
Geol. 2 *Physical Geology Laboratory* 1
Electives (minimum four credits) 4

Chem. 11, 12 *Survey of Chemistry* **or** Biol. 252 *Flora of West Virginia* **or**
Phys. 1, 2 *Introductory Physics* **or** Astro. 106 *Descriptive Astronomy* 3

*Required for Multi-Subjects Program.

Note that either Biol. 1 and 3 or Biol. 2 and 4 are required for Multi-Subjects; all are required for Science specialization.

SOCIAL STUDIES Grades 5-8 **33**

Lower-Division Required Courses **21**

Econ. 51 *The Economic System* 3
Hist. 4 *Latin American: Past and Present* 3
Hist. 52 *Growth of the American Nation to 1865** 3
Hist. 53 *Making of Modern America, 1865 to the Present** 3
Geog. 2 *World Regions** 3
Pol. S. 2 *The American Federal System* 3
Soc. & A. 5 *Introduction to Anthropology* **or**
Soc. & A. 51 *World Cultures** 3

Upper-Division Required Courses **12**

Geog. 140 *United States and Canada* 3
Hist. 153 *West Virginia** 3
Hist. 179 *World History to 1500** 3
Hist. 180 *World History Since 1500* 3

*Required for Multi-Subjects Program.

MENTALLY IMPAIRED (MILD AND MODERATE) Grades K-12

Required Courses **15**

Sp. Ed. 250 *Survey of Exceptional Children and Adults* 3
Sp. Ed. 255 *Introduction to Mental Retardation* 3
Sp. Ed. 260 *Curriculum and Methods for Special Education* 3
Sp. Ed. 281 *Special Problems and Workshop* 3
SPA 250 *Speech-Language-Hearing: Development-Disorders* 3

*Students who wish to be certified to teach mentally impaired children and youth will earn six hours of student teaching at the elementary level and six hours in a program for the mentally impaired. (See Professional Education requirements.)

PROGRAMS FOR SECONDARY EDUCATION

General Studies Requirements **49-50**

Note: Electives must be selected from University-approved Cluster classes.

General **11**

Engl. 1 *Composition and Rhetoric* 3
Engl. 2 *Composition and Rhetoric* 3
Math 3
General Physical Education 2

Cluster A Humanities and Fine Arts **15**

Literature 3
Art 30, Music 30, or Theatre 30 3
Religious Studies, Philosophy, Humanities, Composition,
Linguistics, or Foreign Language 3
History 3
Elective in same discipline as one of the completed courses above 3

Cluster B Social and Behavioral Sciences **12**

Soc. & A. or MDS 3
Social Studies electives in Geog., Econ., Psych. 1,
Pol. Sci., MDS, Soc. & A. 6
Cluster B elective 3

(Three courses must be in different disciplines; two courses must be in the same discipline)

Cluster C Natural Sciences and Math 11-12

- Laboratory Science 4
- Cluster C in a different discipline 3-4
- Cluster C courses (to total 11 or more credits) 3-4
- One of the Cluster A and B courses must be used to fill the International/Minorities requirement.

PROFESSIONAL EDUCATION

Required Courses 32-35

- Foundation for Teaching 8
- C&I 7 *Introduction to Education* 2
- Ed. P. 103, 105 *Human Development and Learning* 6
- Teaching Methods in Area of Specialization 3-6
- To be scheduled with General Methods (below) and completed before student teaching semester.

Select those related to teaching fields:

- C&I 124 *Teaching Language Arts: Secondary School* 3
- C&I 134 *Teaching Mathematics: Secondary School* 3
- C&I 144 *Teaching Science: Secondary School* 3
- C&I 154 *Teaching Social Studies: Secondary School* 3
- Ag. Ed. 160 *Methods of High School Teaching of Agr.* 3
- Art 165 *Art Education in the Elementary School* 3
- Art 166 *Art Education in the Secondary School* 3
- H.E.Ed. 175 *Methods of Teaching Home Economics* 3
- H.E.Ed. 278 *Vocational Home Economics* 3
- Lang. 221 *The Teaching of Foreign Languages* 3
- Music 151 *Music Education* 3
- Music 152 *Music Education* 3
- P.P.E. 126 *Physical Education, Grades K-6* 4
- P.P.E. 133 *Physical Education, Grades 7-12* 5
- Comm. 201 *Principles of Communication Education* 3
- Saf. S. 151 *Driver and Highway Safety Fundamentals* 3

General Methods 6

- C&I 104 *Principles of Teaching in Secondary Schools* 4
- Rdng. 222 *Reading in the Content Areas* 2

Practicum

Select according to teaching level and fields: 15

- C&I 188 *Secondary Student Teaching* 12
- C&I 187 and C&I 188 *Elementary and Secondary Student Teaching* (six hours each) 12
- C&I 188 and Sp. Ed. 280 *Secondary Student Teaching* **and** *Special Education Student Teaching* (six hours each) 12
- C&I 280 *Workshop Problems Student Teaching* 3

TEACHING FIELDS Grades 5-8, 5-12, and K-12

VOCATIONAL AGRICULTURE Grades 5-12 (Single Teaching Field) 45

Required Courses Core Program* 28

- Ag. Ec. 104 *Farm Management* 3
- Ag. Ed. 162 *Group Organization and Leadership* 2
- Agr. M. 120 *Shop Theory and Methods* 4
- Agr. M. 230 *Farm Structures* **or** Agr. M. 240 *Agricultural Engines* **or** Agr. M. 260 *Advanced Farm Marchinery* or Agr. M. 270 *Electricity in Agriculture* 3

A&VS 51 *Principles of Animal Science* 4
Pl. Sc. 52 *Principles of Plant Science* 4
Agron. 2 *Principles of Soil Science* **or** 4
Agron. 10 *Forest Soils* 3
Selected Agricultural Electives** 4-5

Agricultural Minors (select one):

Agricultural Production and Management **17**

Courses selected from among the following:***

An. Nu. 101, 294; An. Ph. 100, 225, 226; An. Pr. 108, 137, 138, 139, 141, 142, 144, 145, 146, 240; F. Sci. 134, 166; Vet. Sci. 102; For. 140; F. Man. 132; Agron. 210, 212, 251, 252, 254; Gen. 171; Ento. 204, 212; Hort. 107, 115, 117, 204, 242, 245, 246; Pl. Path. 201; Ag. Ec. 200, 206, 231, 235, 240; Ag. M. 230, 240, 260, 270; A&VS 180; Pl. Sc. 180; Res. M. 1, 180; Ag. Ed. 264; Ag. 200; Ag. & For. 295.

**Substitutions for core program courses may be made, if necessary, with equivalent courses and credit hours.

***Electives, to be selected in consultation with adviser, are based on individual student needs.

****Credit hours selected from among available courses, in consultation with adviser, based on individual student needs.

Animal Processing **17**

Courses selected from among the following.***

Fd. Sc. 107, 112, 130, 134, 166, 167, 267; Vet. Sci. 102; Ag. Micro. 141; An. Pr. 138, 139, 141, 142, 145, 146, 240; A&VS 180; Res. M. 1, 180; Ag. Ec. 231, 235; Ag. Ed. 264; Ag. & For. 295.

Agricultural Mechanics **17**

Courses selected from among the following:***

Agr. M. 120, 220, 230, 240, 260, 270; I.E. 7, 8; Res. M. 180; Ag. Ed. 264; Ag. & For. 295.

Conservation **17**

Courses selected from among the following:***

F. Man. 12, 122, 132, 151, 211; For. 140; F. Hyd. 243; Rc. & Pk. 56, 142, 251; Agron. 115, 210, 212, 250; L. Arc. 229; Biol. 51; Wd. Sc. 121, 123, 132; Pl. Sc. 180; Res. M. 180; Ag. Ed. 264; Ag. & For. 295; Ento. 152, 212; Pl. Path. 153; Ag. Ec. 200; Ag. M. 240, 260; Res. M. 1; W. Man. 131.

Ornamental Horticulture **17**

Courses selected from among the following:***

Hort. 107, 116, 151, 162, 204, 245; Agron. 210, 250, 251; L. Arc. 40, 41, 229; Ento. 204, 212; Pl. Path. 201; Ag. M. 230, 240, 260, 270; Pl. Sc. 180; Res. M. 1, 180, Ag. Ed. 264; Ag. & For. 295.

ART Grades K-12 (Single Teaching Field) **60**

Required Courses **60**

Art 11, 12 *Drawing* 6
Art 121, 122 *Visual Foundation* 6
Art 113 *Painting* 3
Art 100 *Directed Art Studies* (Studio) 3
Art 126 *Sculpture* 3
Art 100 *Directed Art Studies* (Studio) **or**
Art 200 *Directed Art Studies* (Studio) 3
Art 130 *Printmaking* **or**
Art 140 *Ceramics* 3

Art 131 *Printmaking* **or**
Art 141 *Ceramics* 3
Art 200 *Directed Art Studies* (Studio) 3
Art 165 *Art Education in the Elementary School* 3
Art 166 *Art Education in the Secondary School* 3
Art 211 *Figure Drawing* 3
Art 200 *Directed Art Studies* (Art Education) 3
Art 200 *Directed Art Studies* (Studio elective) 9
Art 105 *Survey of Art* 3
Art 106 *Survey of Art* 3

****Credit hours selected from among available courses, in consultation with adviser, based on individual student needs.

ATHLETIC TRAINING Grades 5-12

(To be combined with another teaching field) **36 ***

(This is an experimental program previously listed.)

P.P.E. 121 *Sport Injury Control and Management* 3
S.E.S. 164 *Kinesiology* 3
S.E.S. 165 *Physiology of Motor Activities* 3
P.P.E. 176 *Adapted Program in Physical Education* 2
P.P.E. 220 *Advanced Athletic Training 1* 3
P.P.E. 221 *Advanced Athletic Training 2* 3
P.P.E. 222 *Advanced Athletic Training 3* 3
P.P.E. 223 *Athletic Training Practice* 3
P.P.E. 219 *Human Anatomy* 3
P.P.E. 324 *Issues in Athletic Training* 3
Saf. S. 70 *First Aid and Emergency Care* 3
Physi. 141 *Elementary Physiology* **or**
Biol. 166 *Human Physiology* **or**
Physi. 241 *Homeostatic Mechanisms of Body Function* 4

ENGLISH Grades 5-12 (Single Teaching Field) 50

Lingu. 1 *Introduction to Language* 3
Engl. 1, 2 *Composition and Rhetoric* 6
Engl. 21, 22 *English Literature Surveys* 6
Engl. 24, 25 *American Literature Surveys* 6
Engl. 108 *Advanced Composition* (specially designated section) 3
Engl. 111 *The English Language* 3
Engl. 125 *World Literature* 3
Engl. 293 *Practicum in Teaching Composition* 1
Engl. 294 *Fiction for Adolescents* 3
Engl. 295 *Approaches to Teaching Composition* 3
Two 3-hour electives in English 6
C&I 224 *Approaches to Teaching Language* 2
C&I 225 *Approaches to Teaching Literature* 2
Approved elective in regional, ethnic, or minority literature 3

FOREIGN LANGUAGES Grades 5-12
FRENCH Grades 5-12 *

Required Courses **36**

Frch. 1, 2 *Elementary French* 6
Frch. 3, 4 *Intermediate French* 6
Frch. 103, 104, 109, 110 *Advanced French* 12

Frch. 111 *French Lit. from Middle Ages to Eighteenth Century* 3
Frch. 112 *La Lit francaise de Louis XV a de Gaulle* 3
Frch. 217 *French Civilization* **or**
Frch. 292 *Pro-Seminar; French Culture* 3
Frch. 231 *Phonetics and Pronunciation* **or**
Lingu. 247 *Structure of Modern French* 3

GERMAN Grades 9-12*

Required Courses **36**
Ger. 1, 2 *Elementary German* 6
Ger. 3, 4 *Intermediate German* 6
Ger. 103, 104, 109, 110 *Advanced German* 12
Ger. 111 *German Literature to 1832* 3
Ger. 112 *German Literature Since 1832* 3
Ger. 265 *German Civilization* **or**
Ger. 292 *Pro-Seminar: German Culture* 3
Lingu. 111 *Introduction to Structural Linguistics* or
Lingu. 257 *Structure of German* 3

RUSSIAN Grades 9-12*

Required Courses **36**
Russ. 1, 2 *Elementary Russian* 6
Russ. 3, 4 *Intermediate Russian* 6
Russ. 103, 104, 109, 110 *Advanced Russian* 12
Russ. 144, 145 *Survey of Russian Literature* 6
Russ. 292 *Pro-Seminar: Russian Culture* 3
Lingu. 111 *Introduction to Structural Linguistics* **or**
Lingu. 267 *Structure of Russian* 3

SPANISH Grades 5-12*†

Required Courses **36**
Span. 1, 2 *Elementary Spanish* 6
Span. 3, 4 *Intermediate Spanish* 6
Span. 103, 104, 109 *Advanced Spanish* 9
Span. 116 *Spanish Civilization and Culture* 3
Span. 117 and 118 or Span. 121 and 122 6
Span. 292 *Pro-Semniar: Latin American Culture* 3
Lingu. 111 *Introduction to Structural Linguistics* **or**
Lingu. 217 *Structure of Spanish* 3

LATIN Grades 5-12 *†

Required Courses **36**
Class. 1, 2 *Elementary Latin* 6
Class. 3 *Intermediate Latin* 3
Class. 4 *Cicero's Orations* 3
Class. 101 *Greek and Roman Civilization and Culture* 3
Class. 102 *Greek and Roman Myths* 3
Class. 109 *Selections from Roman Prose* 3
Class. 110 *Selections from Roman Poetry* 3
Lingu. 111 *Introduction to Structural Linguistics* 3
Approved Electives (Select three: Class. 201, 202, 235, 292) 9

* To be combined with another teaching field.
† Single teaching field if student is in graduate school or is a foreign language major.

HEALTH EDUCATION Grades 5-12

(To be combined with another teaching field)

Required Courses 31

Hl.Ed. 50 *History and Philosophy of Health Education* 3
Hl.Ed. 70 *Health of the Individual* 3
Hl.Ed. 71 *Health in the Community* 3
Hl.Ed. 101 *Elementary School Health Program* 2
Hl.Ed. 102 *Secondary School Health Program* 2
Hl.Ed. 104 *Organization and Administration of the School Health Program* 3
Hl. Ed. 220 *Drug and Alcohol Abuse Prevention* 3
Saf. S. 70 *First Aid and Emergency Care* 3
S.E.S. 165 *Physiology of Motor Activities* **or**
*Biol. 166 *Human Physiology* 3
Psych. 141 *Introduction to Human Development* 3
HN&F 71 *Introduction to Human Nutrition* 3

HOME ECONOMICS Grades 5-12 (Single Teaching Field) 53

Required Courses (Core) 15

CD&FS 12 *Introduction to Marriage and the Family* 3
Tx.&Cl. 124 *Apparel Construction and Fitting* **or**
Tx.&Cl. 224 *Flat Pattern Design* 3
HN&F 71 *Introduction to Nutrition* 3
HM&FE 165 *Home Management: Principles and Applications* 3
ID&H 31 *Introduction to Design* 3

Required Courses 38

CD&FS 112 *Toddler and Preschool Development* 3
CD&FS 211 *Middle Childhood-Early Adolescent Development* 3
CD&FS 214 *Family Development* 3
Tx.&Cl. 27 *Introductory Textiles* 3
Tx.&Cl. 121 *Clothing for the Family* 3
HN&F 55 *Food Principles and Practices* 4
HN&F 151 *Meal Management* 4
HM&FE 161 *Family Economics* 3
HM&FE 167 *Household Equipment* 3
HM&FE 261 *Consumer Economics* 3
ID&H 33 *Housing Design* 3
H.E.Ed. 278 *Vocational Home Economics* 3

JOURNALISM Grades 9-12 23

(To be combined with another teaching field)

Required Courses 24

Journ. 1 *Introduction to Mass Communications* 3
Journ. 15 *Basic Journalistic Writing* 3
Journ. 18 *News Writing* 3
Journ. 19 *Copy Editing and Make-up* 3
Adv. 113 *Principles of Advertising* 3
Journ. 120 *Introduction to Photography* 3
N-E 225 *High School Publications Advising* 3
N-E 227 *History of Journalism* 3

MATHEMATICS Grades 5-12 (Single Teaching Field) 30

Required Courses 24

Math. 15, 16 *Calculus* 8
Math. 17 *Applied Mathematics* 4
Math. 133 *Introductory Algebra for Teachers* 3

Math. 138 *Modern Geometry for Teachers* 3
Math. 143 *Introduction to Linear Algebra* **or**
Math. 241 *Applied Linear Algebra* 3
Math. 226 *Mathematical Statistics* 3

Approved Electives **6**

Math. 113 *Differential Equations* 3
Math. 120 or C.S. 120 *Discrete Mathematics* 3
Math. 163 *Introduction to Concepts of Mathematics* 3
Math. 168 *History of Mathematics* 3
Math. 181 *Introduction to Analysis and Topology* 3
Math. 215 *Applied Modern Algebra* 3
Math. 239 *Elementary Number Theory* 3
Math. 251 *Introduction to Real Analysis* 3
Math. 252 *Introduction to Real Analysis* 3
Math. 291 *Theory of Probability* 3
C.S. 1 or C.S.5 *Introduction to Computer Science* 4

MUSIC Grades K-12 (Single Teaching Field) **64-67**

(Program outline also listed under Division of Music.)

Required Courses

Music 31, 33, 34 *Music Listening, Music Literature* 7
Music 44-47 *Instrumental Majors* **or**
Music 48 *Vocal Majors* 3-8
Music 51, 52, 53 *Conducting* 6
Music 61-68 *Music Theory* 16
Music 100-105 *Major Performance Groups* 4-5

(For instrumental emphasis majors, five hours must be in either Music 11 *Band* or Music 103 *Symphony Orchestra.* For wind and percussion majors, one hour must be in marching band. For vocal emphasis majors, four hours must be in either Music 102 *Choral Union* or Music 105 *Choir.*)

Music 110 *Applied Music* (major performance medium) 12
(Students must achieve proficiency level 7)
Music 110 *Applied Music* (secondary voice and piano) 4-6
(Vocal emphasis majors must achieve proficiency level 3 in voice and proficiency level 3 in piano. Instrumental emphasis majors must achieve proficiency level 2 in piano.)
Music 151, 152 (C&I 167, 168) *Music Education* 6
Music 248 *Music Arranging for Public School Groups* 2
(Required of Vocal Emphasis Majors Only)
Music 49 *Vocal Pedagogy* 2
(Required of Instrumental Emphasis Majors Only)
Music 115 *Chamber Music* 1

ORAL COMMUNICATION Grades 5-12 **37**

(To be combined with another teaching field)

Required Courses

Comm. 11 and 12 *Principles of Human Communication and Human Communication in the Interpersonal Context* 3
Comm. 80 *Introduction to the Mass Media* 3
Comm. 106 *Non-Verbal Communication* **or**
Comm. 131 *Human Communicaion and Language Behavior* 3
Comm. 107 *Human Communication and Rational Decisions* 3
Comm. 133 *Interpersonal Communication* 3
Comm. 180 *Effects of Mediated Communication* 3

Comm. 201 *Principles of Communication Education* 3
SPA 250 *Speech-Language-Hearing: Development-Disorders* 3
Theat. 50 *Oral Interpretation* **or**
SPA 80 *Speech Improvement: Theory and Performance* 3
Theat. 74 *Acting* 3
Theat. 100 *Fundamentals of Technical Theatre* 4
Theat. 180 *Directing* 3

PHYSICAL EDUCATION Grades K-12 (Single Teaching Field) **45-46**

*(Students who wish to be certified in Physical Education, Grades K-12 will do student teaching at the elementary and the secondary levels.)

Theory and Foundations **32**
P.P.E. 67 *Introduction to Physical Education* 3
P.P.E. 75 *Motor Learning and Development* 2
P.P.E. 109 *Early Childhood Activities* 2
P.P.E. 110 *Middle Childhood Activities* 2
P.P.E. 121 *Sport Injury Control and Management* 3
P.P.E. 126 *Implementing Physical Education Programs, K-8* 4
P.P.E. 133 *Physical Education in Grades 7-12* 5
P.P.E. 176 *Adapted Program in Physical Education* 2
P.P.E. 177 *Special Physical Education Practicum* 1
S.E.S. 71 *Sport in American Society* **or**
S.E.S. 72 *Psychological Perspectives in Sport* 3
S.E.S. 164 *Kinesiology* 3
S.E.S. 165 *Physiology of Motor Activities* 3

Psychomotor Sport and Movement Analysis **13-14**

Team and Individual Sports **8**
Student must elect four of the following six courses:
P.P.E. 45 *Football, Baseball, Softball*
P.P.E. 46 *Volleyball, Soccer, Speedball*
P.P.E. 47 *Basketball, Field Hockey, Team Handball*
P.P.E. 48 *Tennis, Badminton, Golf*
P.P.E. 49 *Archery, Bowling, Fencing*
P.P.E. 50 *Wrestling, Weight Training, Track and Field*

Aquatics **1 or 2**
Student must elect one of the following three courses:
P.P.E. 57 *Aquatics*
P.P.E. 59 *Synchronized Swimming*
P.P.E. 124 *Water Safety Instructorship*

Dance **2**
Student must elect one of the following four courses:
Dance 35 *Theory and Practice of Modern Dance Techniques*
Dance 37 *Advanced Dance Techniques with Principles of Choreography*
Dance 38 *Dance Composition*
Dance 39 *Folk and Ballroom Dance*

Gymnastics **2**
Student must elect one of the following two courses:
P.P.E. 65 *Gymnastics*
P.P.E. 66 *Advanced Gymnastics*

SAFETY STUDIES Grades 9-12 **18**
(To be combined with a 9-12, K-12, or 5-12 specialization)

Required Courses
Saf. S. 70 *First Aid and Emergency Care* 3
Saf. S. 131 *Accident Prevention and Control Principles* 3
Saf. S. 151 *Driver and Highway Safety Fundamentals* 3

Saf. S. 231 *Safety on Motor Transporation Sciences* **or**
Saf. S. 232 *Safety Education Principles and Content* 3
Saf. S. 254 *Teaching Driver and Highway Safety* 3
Saf. S. 256 *Driver and Safety Instructional Innovations* 3

SCHOOL LIBRARIAN Grades K-12 **24**

(To be combined with another teaching field)

Required Courses

L. Sci. 291 *Advanced Study* 3
L.Sci. 201 *Reference and Bibliography* 3
L.Sci. 203 *Literature for Children* 3
L.Sci. 205 *Young Adult Literature* 3
L.Sci. 222 *Field Practice* 3
L.Sci. 223 *Cataloging and Classification* 3
L.Sci. 250 *Managing School Library Media Centers* 3
T.E. 372 *Development of Instructional Materials* 3

SCIENCES

BIOLOGICAL SCIENCES Grades 9-12 **28-30**

(To be combined with another teaching field)

* NOTE: Due to general public school hiring practices and because of the interrelationships of concepts in science, it is strongly recommended that students who wish a specialization in biological sciences take their second specialization in mathematics, chemistry, physics, or general science.

Required Courses **23-24**

Biol. 15 *Principles of Biology* 4
Biol. 17 *The Functional Diversity of Organisms* 4
Biol. 19 *The Living Cell* 4
Biol. 21 *Ecology and Evolution* 4

AND

*Two courses from two different areas from among these three areas of study: 7-8

***Cellular/Molecular* OR**

*Biol. 214 *Molecular Basis of Cellular Growth* 3
*Biol. 211-212 *Advanced Cellular/Molecular Biology with lab* 3-4

***Organismic* OR**

*Biol. 255 *Invertebrate Zoology* 4
*Biol. 261 *Comparative Anatomy* 4

Ecology/Systematic

*Biol. 151 *Plant Systematics* **or** 4
*Biol. 152 The Plant Kingdom **or** 4
*Biol. 169 Plant Physiology **or** 4
*Biol. 243 Plant Ecology 4

Approved Electives **6**

Bact. 141 *General Bacteriology* 4
Biology -Any 200-level course other than Biology 209 4
Chem. 15 *Fundamentals of Chemistry* 4
Chem. 16 *Fundamentals of Chemistry* 4
For. 140 *West Virginia's Natural Resources* 3
Geol. 1 *Physical Geology* 3
Geol. 2 *Physical Geology* 1
Geol. 3 *Historical Geology* 3
Geol. 4 *Historical Geology* 1
Phys. 1 *Introductory Physics* 4
Phys. 2 *Introductory Physics* 4

CHEMISTRY Grades 9-12 **30**

To be combined with another teaching field)

NOTE: Due to general public school hiring practices and because of the interrelationships of concepts of science, it is strongly recommended that students who wish a specialization in chemistry take their second specialization in mathematics, biology, physics, or general science.

Required Courses **24**

- Chem. 15 *Fundamentals of Chemistry* 4
- Chem. 16 *Fundamentals of Chemistry* 4
- Chem. 115 *Introductory Analytical Chemistry* 4
- Chem. 133-135 *Organic Chemistry* 4
- Chem. 134-136 *Organic Chemistry* 4
- Chem. 141-142 *Physical Chemistry* **or**
  - Chem. 246, 247 *Introduction to Physical Chemistry* 4

Approved Electives **6**

- Phys. 1 *Introductory Physics* 4
- Phys. 2 *Introductory Physics* 4
- Phys. 11 *General Physics* 4
- Phys. 12 *General Physics* 4
- Geol. 1 *Physical Geology* 3
- Geol. 2 *Physical Geology* 1
- Geol. 3 *Historical Geology* 3
- Geol. 4 *Historical Geology* 1
- Chem. 201 *Chemistry Literature* 2
- Chem. 210 *Instrumental Analysis* 3
- Chem. 235 *Methods of Structure Determination* 4

GENERAL SCIENCE Grades 5-12 **35**

(To be combined with another teaching field)

Required Courses

- Astro. 106 *Descriptive Astronomy* 3
- Biol. 1 *General Biology* and Biol. 3 *Gen. Biol. Lab* 4
- Biol. 2 *General Biology* and Biol. 4 *Gen. Biol. Lab* 4
- Chem. 11 and 12 *Survey of Chemistry* **or**
  - Chem. 15 and 16 *Fundamentals of Chemistry* 8
  - (If your second field is chemistry)
- Phys. 1 and 2 *Introductory Physics* **or**
  - Phys. 11 and 12 *General Physics* 8
  - (If your second field is physics) .....
- Geol. 1 *Physical Geology* 3
- Geol. 2 *Physical Geology* 1
- Geol. 3 *Historical Geology* 3
- Geol. 4 *Historical Geology* 1

PHYSICS Grades 9-12 **28-30**

(To be combined with another teaching field)

NOTE: Due to general public school hiring practices and because of the interrelationships of concepts in science, it is strongly recommended that students who wish a specialization in Physics take their second specialization in mathematics, chemistry, biology, or general science.

Required Courses (Prerequisite: Math. 15 and 16) **19**

- Phys. 11 *General Physics* 4
- Phys. 12 *General Physics* 4
- Phys. 124 *Introductory Modern Physics* 4
- Phys. 231 *Theoretical Mechanics* 3
- Phys. 233 *Introductory Electricity and Magnetism* 3
- Phys. 241 *Advanced Physics Laboratory* 1

Approved Electives 9-11

Phys. 232 *Theoretical Mechanics* 3
Phys. 234 *Introductory Electricity and Magnetism* 3
Phys. 241 *Advanced Physics Laboratory* 2-4
Phys. 251 *Introductory Quantum Mechanics* 3
Phys. 263 *Nuclear Physics* 3
Phys. 271 *Solid State Physics* 3
Phys. 283 *Thermodynamics* 3
Chem. 15 *Fundamentals of Chemistry* 4
Chem. 16 *Fundamentals of Chemistry* 4
Geol. 1 *Physical Geology* 3
Geol. 2 *Physical Geology Laboratory* 1
Geol. 3 *Historical Geology* 3
Geol. 4 *Historical Geology Laboratory* 1

SOCIAL STUDIES Grades 5-12 (Single Teaching Field) **60**

Lower-Division Required Courses **30**

Econ. 54 *Principles of Economics* 3
Econ. 55 *Principles of Economics* 3
Geog. 2 *World Regions* 3
Hist. 4 *Latin America: Past and Present* 3
Hist. 52 *Growth of the American Nation to 1865* 3
Hist. 53 *Making of Modern America, 1865 to the Present* 3
Pol. S. 1 *Introduction to Political Science* **or**
Pol. S. 3 *Global Political Issues: An Introduction* 3
Pol. S. 2 *The American Federal System* 3
Soc. & A. 1 *Introduction to Sociology* 3
Soc. & A. 5 *Introduction to Anthropology* **or**
Soc. & A. 51 *World Cultures* 3

Upper-Division Required Courses **21**

Econ. 110 *Comparative Economic Systems* 3
Geog. 210 *Global Issues: Inequality and Independence* 3
Hist. 153 *West Virginia* 3
Hist. 179 *World History to 1500* 3
Hist. 180 *World History Since 1500* 3
Hist. 264 *American Foreign Policy and Diplomacy,1941 to the Present* **or**
Pol. S. 264 *Conduct of American Foreign Relations* 3
Pol. S. 120 *State and Local Government* 3

Electives **9**

*Students are required to take one 3-hour course from each of three clusters of approved courses. The approved courses will be provided by the student's adviser.

International-Comparative-Area Studies Cluster 3
Social Justice Cluster 3
American Cluster 3

SOCIAL STUDIES Grades 5-8 **33**

(Second Field Required)

Lower-Division Required Courses **21**

Econ. 51 *The Economic System* 3
Hist. 4 *Latin America: Past and Present* 3
Hist. 52 *Growth of the American Nation to 1865* 3
Hist. 53 *Making of Modern America, 1865 to the Present* 3
Geog. 2 *World Regions* 3
Pol. S. 2 *The American Federal System* 3
Soc. & A. 5 *Introduction to Anthropology* **or**
Soc. & A. 51 *World Cultures* 3

Upper-Division Required Courses 12

Geog. 140 *United States and Canada* 3
Hist. 153 *West Virginia* 3
Hist. 179 *World History to 1500* 3
Hist. 180 *World History Since 1500* 3

Faculty

Education Foundations

Professors

Franklin Parker, Ed.D. (G. Peabody TC). *Emeritus.*
Mary I. Yeazell, Ed.D. (U. Ill.). *Emerita.*

Assistant Professor

Samuel Stack, Ed.D. (USC). Educational theory, Social foundations of education.
Van Dempsey, Ed.D. (UNC-Chapel Hill). Educational policy, Social foundations of education.

Educational Psychology

Professors

Benjamin H. Bailey, Ed.D. (U. Fla.). Educational psychology, research, measurement, and evaluation.
Sheldon R. Baker, Ed.D. (Case West. Res. U.). Educational psychology, Psychological testing, Research and statistical methodology.
Lawrence Fraley, Jr., Ed.D. (USC). Conceptual foundations of behaviorology, The science of human behavior applied to instructional development and teaching.
John T. Grasso, Ph.D. (Ohio St. U.). Educational development, Research, Evaluation, Computers, Information systems.
Daniel E. Hursh, Ph.D. (U. Kans.). Developmental and child psychology, Instructional and environmental design, Language development.
Rogers McAvoy, Ph.D. (Ind. U.). Education, Learning, Instruction.
James C. McCroskey, Ed.D. (Penn St. U.). Adjunct. Communication theory, instruction, avoidance, Organizational communication.
Anne H. Nardi, Ph.D. (WVU). Division Director and Chairperson. Developmental psychology, Problem solving, Adult learning.
John J. Paterson, Ed.D. (Mich. St. U.). Administrative and educational services, Educational statistics and measurement.
Virginia P. Richmond, Ph.D. (U. Nebr.). Instructional communication, Organizational and interpersonal communication, Communication apprehension.
Meng Shu Tseng, Ed.D. (Ind. U.). *Emeritus.*
Ernest A. Vargas, Ph.D. (U. Pitt). Behaviorology, Instructional design, Verbal behavior.
Julie S. Vargas, Ph.D. (U. Pitt). Instructional design, Behavioral analysis, Microcomputers, Verbal behavior.
Richard T. Walls, Ph.D. (Penn St. U.). Educational psychology, Human learning, Problem solving, Vocational rehabilitation.

Associate Professors

W. Michael Reed, Ed.D. (VPI&SU). Adjunct. Microcomputer research, Writing research, Cognition and writing.
Floyd L. Stead, Ed.D. (WVU). Education, Educational measurement, evaluation, and research.

Assistant Professors

Curtis J. Bonk,Ph.D.(U.Wisc.). Thinking skill research, metacognition and social cognition within reading and writing, New tecnologies in education.

Susan M. Rodman, Ed.D. (WVU). Adjunct. Computer and information systems, Statistical methods.

Special Education

Professors

Thomas P. Lombardi, Ed.D. (U. Ariz.). Learning disabilities, Mental retardation.

Gabriel A. Nardi, Ph.D. (U. Wisc.). Behavioral disabilities, Mental retardation.

Wilfred D. Wienke, Ed.D. (U. N. Colo.). Chairperson. Professional development, Mental retardation, Research.

Associate Professors

Edmund J. Coombe, Ed.D.(Temple U.). Mental retardation, Special education administration, Transition.

Barbara L. Ludlow, Ed.D. (WVU). Severe/profound handicaps, Clinical supervision, Early intervention.

Diane T. Woodrum, Ed.D. (WVU). Mental retardation, Behavioral disorders, Learning disabilities.

Assistant Professors

Gail E. Fitzgerald, Ed.D.(U.Iowa). Behavioral disorders, Technology in special education.

Joyce A. Meikamp, Ed.D. (Ball State U.). Clinical. Learning disabilities, Mental retardation.

Luise B. Savage, Ed.D. (WVU). Clinical. Gifted, Clinical supervision.

Instructor

Cheryl L. Wienke, M.S. (U. No. Colo.). Clinical. Clinical supervision.

Lecturers

A.James Artesani, M.Ed. (U. of Maine). Severe/profound handicaps, Supervision.

Judith A. Challoner, M.Ed. (U. of Wash.). Educational psychology, Early intervention.

Gia S. Deasy,M.A. (WVU). Behavioral disorders, Clinical supervision.

Kevin A. Koury,M.A. (WVU). Learning disabilities, Clinical supervision.

Technology Education

Professors

Thomas J. Brennan, Ed.D. (WVU). *Emeritus.*

Paul W. DeVore, Ph.D. (Penn St. U.). Technology education, Technology and community development, Transportation systems.

David L. McCrory, Ph.D. (Case West. Res. U.)—Chairperson. Curriculum studies/ evaluation, Technology transfer, Professional development.

Edward C. Pytlik, Ph.D. (Iowa St. U.). Technology education, Production systems, International development.

Associate Professor

George R. Maughan, Jr., Ed.D. (WVU). Technology education, Communication/ information systems, Microcomputers.

Speech Pathology and Audiology.

Dennis M. Ruscello, Ph.D., Chairperson

Program Objectives

The Department of Speech Pathology and Audiology is committed to the preparation of students interested in graduate work and a career in speech pathology or audiology. The pre-professional undergraduate program emphasizes education in basic speech and hearing sciences, anatomy and physiology of the speech and hearing mechanism, and normal development and behavior in speech, hearing, and language.

Pre-Speech Pathology and Audiology

Normally, students are first admitted to the pre-speech pathology and audiology program of study. After meeting certain requirements (a 2.66 grade- point average-the equivalent of two B's and one C-in SPA 50 or 250, 153, and 154, and a 2.50 cumulative grade-point average), the student is admitted to the degree program. This transition normally takes place at the end of the sophomore year.

Career Prospects

The discipline of speech pathology and audiology is an exciting field wherein clinicians provide services to speech and/or hearing handicapped individuals. The demand for certified clinicians is continually increasing; consequently, job prospects remain very good. The pre-professional undergraduate program and graduate study in either speech pathology or audiology enable graduates to seek jobs in a variety of settings. Speech pathologists and audiologists are employed in schools, hospitals, rehabilitation centers, community clinics, physicians' offices, and private practice. Helping speech, language or hearing handicapped persons is a rewarding profession.

Admission

To be admitted to the undergraduate program in speech pathology and audiology (after the completion of 58 hours or typically at the end of the sophomore year) you must have a cumulative GPA of 2.50 with a 2.66 GPA in SPA 50 or 250, 153, and 154. Although you may opt to take SPA 80 (program requirement) or SPA 280, 210, 265, or 281A (electives) during your first two years, the grades earned in these courses are not combined with grades from SPA 50 or 250, 153, and 154 while you are still in the pre-speech pathology and audiology program.

NOTE: Although SPA 152 is required for first semester sophomores, the grade earned in SPA 152 is not combined with grades earned in SPA 50 or 250, 153, and 154 while you are still in the pre-speech pathology and audiology program.

Although you may repeat SPA 50 or 250, 153, and 154 until your grade-point average reaches the required 2.66, you are not permitted to take additional required courses (with the exception of SPA 80) until you are admitted to the program. The first grade in any of the three required courses is disregarded for the purpose of meeting admission requirements.

You are considered pre-SPA until you complete these three courses with the required grade point. You may then complete a formal, written application to enter the program; you will receive a letter of notification of action from the department.

You must maintain a 2.50 cumulative grade-point average and a 2.75 SPA grade-point average in order to continue in the program and graduate with a degree in speech pathology and audiology.

Transfer Admission

If you transfer into speech pathology and audiology from another major at WVU or from another university, you must have at least a 2.50 GPA at entry and maintain a 2.50 for the duration of the program. In addition, you must have taken courses

equivalent to SPA 50 or 250, 153 and 154 with a 2.66 average for the three courses.

You must write a formal application for admission; you will receive written notification of acceptance into the program. Furthermore, you must maintain a 2.50 cumulative GPA and a 2.75 in speech pathology and audiology courses for the remainder of the program in order to continue and graduate.

Graduation Requirements

A total of 128 academic credit hours, including 58 upper-division hours, are required for the degree of Bachelor of Science in Speech Pathology and Audiology (B.S.). The following are specific requirements:

1. Successful completion of the University Liberal Studies Program (LSP). Speech Pathology and Audiology (SPA) majors are required to enroll in these LSP Cluster B courses: Linguistics 1 and Psychology 1; Cluster C, Math. 3 and Statistics101.
2. Successful completion of 15 hours of related area courses pertaining to normal growth and development, language learning and communication, and issues concerning the handicapped.
3. Successful completion of a minimum of 62 hours of academic courses in SPA.
4. Successful completion of minimum requirements in clinical practicum.
5. A cumulative GPA of 2.75 in all speech pathology and audiology courses and a cumulative GPA of 2.50.

Faculty

Professors

Carolyn P. Atkins, Ed.D. (WVU). Speech Pathology. Speech improvement, Clinical supervision.

Mary Ellen Tekieli Koay, Ph.D. (U. Okla.). Speech Pathology. Cleft palate, Neurophysiology, Neuropathologies, Clinical supervision.

Norman J. Lass, Ph.D. (Purdue U.). Speech Pathology. Speech perception, Speech acoustics.

Dennis M. Ruscello, Ph.D. (U. Ariz.). Chairperson. Speech Pathology. Language, Articulation, Clinical supervision.

Kenneth O. St.Louis, Ph.D. (U. Minn.). Speech Pathology. Fluency, Voice, Clinical supervision.

Charles M. Woodford, Ph.D. (Syracuse U.). Audiology. Audiological evaluation, Industrial and environmental audiology, Clinical supervision.

Associate Professors

Conrad Lundeen, Ph.D. (U. Iowa). Audiology. Aural rehabilitation, Central auditory disorders, Clinical supervision.

Assistant Professors

Lynn R. Cartwright, M.S. (WVU). Speech Pathology. Parent involvement, Clinical supervision.

Karen Barr Haines, M.S. (WVU). Clinical. Speech Pathology. Argumentative communi cation, Clinical supervision.

Robin R. Jones, M.S. (WVU). Audiology. Aural rehabilitation, Clinical supervision.

Cheryl L. Prichard, M.S. (WVU). Speech Pathology. Public school clinical programs, Rural education, Clinical supervision.

Linda I. Shuster, Ph.D. (Ohio St. U.). Speech Pathology. Aphasia, Speech perception.

Instructors

Jennifer Borsch, M.S. (WVU). Clinical. Speech Pathology. Clinical Supervision.

Gayle Neldon, M.S. (WVU). Clinical. Audiology. Clinical Supervision.

Perley Isaac Reed School of Journalism

Emery L. Sasser, Ph.D. (U. Ill.) Dean
Charles F. Cremer, Ph.D. (U. Iowa). Associate Dean.

Degree Program

Bachelor of Science in Journalism

Specialized Areas:

- Advertising
- Broadcast News
- Journalism Education
- News-Editorial
- Public Relations

The Perley Isaac Reed School of Journalism, established in 1939 and one of the oldest in the United States, offers appropriate education in the broad area of mass communications. Many of the more than 3,000 graduates of the School of Journalism use their training to cover news events throughout the world for print and electronic news media, to manage major accounts in advertising agencies and media departments, and to serve in public relations positions with corporations and other institutions. They are newspaper editors and reporters, radio and television broadcasters, university professors, attorneys, and business men and women.

Accreditation

The Accrediting Council on Education in Journalism and Mass Communication (ACEJMC) fully accredits the School of Journalism and its five sequences: advertising, broadcast news, graduate professional, news-editorial, and public relations. Approximately 88 colleges and universities have earned ACEJMC approval. The School is also a member of the Association of Schools of Journalism and Mass Communications.

Equal Employment Opportunity and Affirmative Action Plan

West Virginia University does not discriminate on the grounds of race, sex, age, handicap, veteran status, religion, sexual orientation, color, or national origin, in the administration of any of its educational programs, activities, or with respect to admission and employment. Inquiries may be directed to the Section 504, Title IX Coordinator, Office of the President (304) 293-4160 or to the School of Journalism (304) 293-3505.

The School of Journalism fully endorses WVU's affirmative action plan and has an historical and continuing policy of applying the plan's principles in all initiatives and activities of the School. Assurance of equal opportunity and affirmative action procedures are included in both the University and School of Journalism guidelines for faculty recruitment. The School has a history and a continuing commitment of maintaining a minority enrollment as high or higher than the percentage of minorities in the West Virginia population. In our efforts to recruit minority students, the School, historically and as continuing practice, visits high schools and community colleges in the State and has periodically sent representatives to high schools in metropolitan areas with large Black populations; responds quickly to minorities seeking information about the School; initiates contact with all who express a journalism interest to representatives of the Office of Admissions, and gives special attention to internship and placement opportunities for minorities.

The School established a pre-entrance exam effective summer, 1990, to test verbal skills and aptitudes for writing careers. We are experimenting with verbal skills tutoring software programs for the School's open Mac lab so that minority students and others may refresh themselves on most of the areas that appear in the qualifying exam.

Professional Relations

A close relationship is maintained with the mass media through the West Virginia Press Association, the West Virginia Press Women, the West Virginia Broadcasters Association, Radio-Television News Directors Association, Public Relations Society of America (West Virginia and Pittsburgh Chapters), American Advertising Association of America, American Advertising Federation, Business and Professional Advertising Association, the Pittsburgh Ad Club, National Press Photographers Association, Society of Professional Journalists, and the West Virginia Public Relations Associates, an adjunct to the press association. These groups have provided educational and financial support to the School.

In turn, the School of Journalism provides regional advertising seminars to aid newspaper publishers, broadcasters, and retail merchants. Newswriting workshops assist state news staffs and weekly newspaper stringer/correspondents. The School has provided science writing symposia and seminars about Appalachia, the future of transportation, writing improvement, and interpretive vs. advocacy reporting for news people; it also has worked with the Public Relations Associates of the Press Association in establishing seminars. The School has assisted journalism teachers by sponsoring summer workshops and by working with their publications staffs during the school year. In 1990, the School of Journalism with the *Reader's Digest* co-sponsored a writers workshop. Twelve editors of national publications and more than 140 writers participated.

Journalism Organizations

Several organizations affiliated with the School of Journalism provide honor and recognition as well as fellowship and education. They are:

Alpha Delta Sigma, scholastic advertising honorary.

American Advertising Federation, professional advertising fraternity.

Kappa Tau Alpha, national scholastic honorary for students with exceptional academic records in journalism.

Public Relations Student Society of America, national public relations professional organization.

Radio-Television News Directors Association, national radio-television professional organization.

The Society of Professional Journalists, professional society for news and broadcasting majors.

Nature of Program

The study of journalism, once limited to vocational training of newspaper reporters, now includes the many varieties of communication. Our program emphasizes professional ethics and responsibilities in the broad study of mass communication and society.

A journalism education involves more than learning to write and edit news stories, to broadcast documentaries, or to develop creative advertisements and public relations campaigns; it involves the study of substantive current issues, trends in the mass media, and the historical and cultural developments in worldwide civilization. Graduates should have a thorough understanding of the development of the United States Constitution and the special roles of freedom of the press and freedom of speech in our political system. Such an education must be interdisciplinary, based upon the liberal arts, social sciences, natural sciences, and business.

The basic goal of the School of Journalism is to educate our graduates for media-related careers in West Virginia and neighboring states. Some of our graduates will seek and succeed in national and international careers.

When you enroll in the School of Journalism, you will find a faculty of sixteen full-time and several part-time professors with extensive mass communications experience. The faculty represents the diversity of the School itself, with appropriate educa-

tional backgrounds and professional experience with newspapers, the wire services, radio and television, public relations firms, advertising agencies, major corporations, and governmental agencies.

The various areas of specialization provide realistic outlets for students' interests. Student reporters and editors are introduced to local print (*Daily Athenaeum*, *Dominion Post*) and electronic (WWVU-FM, WNPB-TV) media. Photographers or photojournalists get practical experience with the *Daily Athenaeum* or as stringers for wire services. Students of print journalism learn electronic editing and pagination. Public relations and advertising majors execute projects of importance to local and state organizations. Internships and fellowships are available on campus, throughout West Virginia, and in many other locations.

The School of Journalism is in renovated Martin Hall, WVU's oldest building (constructed in 1870). More than $1.8 million was spent on renovating, furnishing, and equipping the building in 1976-77. Four laboratories are equipped with Macintosh systems for teaching beginning reporting through desktop publishing. Other labs house modern radio and television equipment, light tables, photoenlargers, cameras, and equipment for independent study. In addition, the reading room stocks current newspapers, magazines, professional journals, and reference works.

Typing Proficiency

Typing proficiency is required before enrollment in journalism classes. You will be expected to submit all assignments in neat, type-written or word- processed form. You must develop word-processing proficiency in Journalism 15.

Admission to Pre-Journalism

The School of Journalism uses the same admission standards as the University for pre-journalism students.

Proficiency in English

We emphasize competence in writing. If you plan to major in journalism, you must achieve at least grades of C in English 1 and 2 and in Journalism 1. In addition, you must pass a journalism qualifying examination before being admitted to the School of Journalism or to Journalism 15. You may not enroll in additional journalism courses until after Journalism 1 and Journalism 15 are completed with grades of C or better.

Scholarships

Approximately 20 majors in the School of Journalism are awarded financial scholarships, ranging from $400 to $1,100, each semester. Applicction must be made to the school's scholarship committee during announced selection periods. Scholarship awards are generally based on academic performance, potential for success in media careers and financial need.

Admission

To be admitted as a School of Journalism major, you must meet these requirements:

1. Achievement of at least a C grades in English 1 and 2. (See "Proficiency in English" above.)
2. Demonstration of necessary skills by passing the School's journalism ualifying examination or its equivalent.
3. Completion of Journalism 1 and 15 with at least C grades.
4. Completion of Library Science 1 with at least a C grade.
5. Successful completion of 45 or more hours (excluding F's) with an overall grade-point average of at least 2.0, or a 2.5 overall grade-point average after 60 or more hours.

6. Application for admission with the School of Journalism; each application must be approved by the associate dean.
7. Agreement to complete at least 45 hours of University credit after acceptance by the School of Journalism.

Graduation Requirements

When you satisfy all general requirements of the University and meet the requirements of the School of Journalism, you are recommended for the Bachelor of Science in Journalism. Your combined credits acquired as a pre- journalism student and as a regularly enrolled journalism major must total no fewer than 128. This total excludes non-translated courses from other colleges, any course (such as Music 102) repeated more than once unless it represents a different learning experience, Communication Studies 80, and Mathematics 2. The 128 hours also excludes Comm. 195, E.F. L. 195, Engl. 194, Pol. Sci. 194, P.P.E. 197, Psych. 194, Soc. Wk. 221, Soc.&A. 194 and S.E.S. 97 unless an exception is approved by the Dean after his study of a written proposal signed by the student, the specific departmental adviser and the proposed intern superviser. Exceptions will not normally include internships that would be acceptable for Journalism Internship credit. While WVU frequently accepts all junior college credits, the School of Journalism follows the Accrediting Council on Education for Journalism and Mass Communication recommendation to accept no more than 12 journalism credits from such institutions.

In line with the national accreditation council and with the School's philosophy about the ratio of professional journalism courses to courses in liberal arts, you will take approximately one-fourth of your hours in journalism. The minimum number of journalism hours is 30, and the maximum number ordinarily is 33. At least 40 hours must be obtained in courses numbered between 100 and 400. You must complete at least 45 hours of University credit after admission to the School of Journalism.

You may pursue another degree concurrently, but you must plan the program with the deans of the two colleges or schools involved. To receive the second baccalaureate degree, you must complete 158 credit hours. If you have one bachelor's degree, you also may seek a bachelor's degree in journalism. Again, you must plan the program with the dean.

If you are within 12 hours of graduation in the last semester, you may elect to take one or more courses for graduate credit. However, you must consult with your adviser.

Scholastic Requirements

To be eligible for graduation, you must earn a minimum 2.0 cumulative grade-point average; concurrently, the average in your minor field must be at least 2.0. Courses totaling 15 hours in the minor field or 12 hours in each of two minors are counted toward the minimum 2.0 grade-point average. **Students must earn at least a C grade in all journalism, advertising, broadcast news, news-editorial, and public relations courses.**

Minor Field

To complete a minor field of study, you must earn at least 15 hours in a subject other than journalism, with no more than three of these hours in courses numbered under 100. Courses at the 100-level or higher, even if they can be taken more than once, ordinarily are counted only once. If you pursue two minors simultaneously, the requirements for each area are at least 12 hours, of which no more than three hours can be numbered under 100. You should consult your adviser about minors. **ACEJMC does not approve communication studies in the liberal arts spectrum; therefore, that discipline cannot be used as a minor.**

Students from other majors are permitted to minor in journalism, but they must take Journalism 1 and 15 and must pass the Journalism qualifying examination to pursue most upper-division journalism courses.

Minor/Special Emphasis

Because many journalism majors need to know about economics and business, a number of special business minors have been developed cooperatively with the College of Business and Economics. The faculty also has approved minors in international studies and women's studies. Students interested in such minors should confer with their advisers.

Probation/Full-Time Load

If on probation, you shall not take more than 15 hours of course work in a semester, and the Committee on Academic Standards may require that you not take more than 12 hours. You may not enroll for more than 18 hours in a single semester without petitioning your adviser nor can you take more than 20 hours without the dean's approval.

Withdrawal From Class Or University

All students enrolled in journalism courses may withdraw from a course with a W grade until Friday of the tenth week of classes (see the University Calendar for the date). After that date, you may withdraw only with the approval of the Committee on Academic Standards, and will receive a grade of W or WU.

Journalism majors who withdraw from the University after the tenth week of a semester are automatically suspended from the School of Journalism for a minimum of one semester (not including a summer session) unless the late withdrawal results from illness. In such cases, you must present a written excuse at the time of withdrawal to avoid automatic suspension.

Internship/Practicum Credit

A number of internship opportunities are available for credit in the summer; to a lesser extent, such credit is available during the academic year. All students interested in this option must apply for it, must register in advance for Journalism 241, and must establish a contract with a sequence head or the designated coordinator. This contract is essentially an agreement that spells out the terms under which credit will be given. It describes the anticipated learning experience, including assignments, reports, type of supervision, and required evaluations by a job supervisor and by a member of the School's faculty.

No more than 10 percent of a student's journalism credits (2-3) can be earned via internships, in accordance with ACEJMC standards. Students who register for a three-hour internship are discouraged from taking other courses during the same semester. Internships for three hours' credit require full-time work for a minimum of ten weeks. Except in special circumstances, students should be paid for internships. Students for whom a full-time three-credit-hour internship cannot be arranged may have the option of taking a mini-internship or practicum (Journalism 242) for one or two hours' credit.

The one-credit-hour practicum requires approximately ten hours per week, for a minimum of ten weeks, of supervised practical experience with an organization whose activities are related to the student's sequence major. Two credit hours for the practicum requires approximately 20 hours per week of practical experience for a minimum of ten weeks. Identical qualifications and procedures are required for the Internship and the practicum, except that the student may take the practicum while enrolled in other courses in the School of Journalism and in the University. **Students may not take both an internship and a practicum for credit.**

Job Placement

The School of Journalism assists its graduates in finding desirable positions. It acts as a placement clearinghouse for current students and graduates, and the faculty

advises and assists students in the preparation of resumes and portfolios. Representatives of newspapers, magazines, public relations, broadcasting, and advertising frequently request that School of Journalism faculty provide applicants for job openings and internships.

StandingCommittees

Academic Standards: Charles F. Cremer (Chairperson), Mel Elbaum, Donna Meadowcroft and student representative.

Advisory/Planning: Emery L. Sasser (Chairperson), John H. Boyer, Charles F. Cremer, Robert M. Ours, R. Ivan Pinnell, and Richard A. Schreiber.

Graduate Studies/Research: John H. Boyer (Chairperson), Charles F. Cremer, Theodore Lustig, Robert M. Ours, James Paty, R. Ivan Pinnell, Emery L. Sasser, and Richard Schreiber.

Journalism qualifying examination: Robert M. Ours (Chairperson), Patricia Findley, Ancella B. Livers.

Library: Ancella B. Livers (Chairperson), Theodore Lustig, Christine Martin and Pamela D. Yagle.

Off-Campus Education: Pamela D. Yagle (Chairperson), Mel Elbaum, Patricia Findley, Ancella B. Livers, Theodore Lustig, R. Ivan Pinnell, William O. Seymour, and three student representatives.

Placement: Ivan Pinnell (Chairperson), Ancella B. Livers, Mel Elbaum, Donald Silcott and three student representatives.

Safety: William O. Seymour (Chairperson), Donna Meadowcroft, and Emery L. Sasser.

Scholarships: James Paty (Chairperson), Patricia Findlay, Donald Silcott and a student representative.

Teacher Awards: William O. Seymour (Chairperson), Richard A. Schreiber and Theodore Lustig.

Teacher Evaluation: Robert M. Ours (Chairperson), John H. Boyer, and William O. Seymour.

Professional Advisory Committee Visiting: Michael Shott (Chairperson), Patricia B. Clark, Robert S. Earle, Karen Robbins, Dale Miller, G. Odgen Nutting, James Roop, Craig Selby and James Swearingen.

Program Objectives

Advertising Curriculum

Richard A. Schreiber, Ph.D., Coordinator

The advertising curriculum is designed to prepare students for careers in the creation, sales, management, and production of advertising.

The minor field is subject to approval by your adviser. Some approved minors are marketing, economics, management, finance, business law, general business, English, and psychology. Students in advertising prepare for careers with advertising agencies, company advertising departments, retail advertising, promotion, and the media.

Broadcast News Curriculum

Charles R. Cremer, Ph.D., Coordinator

Students seeking a career in the news and information area in broadcasting should pursue this curriculum. The student's minor field must be approved by the adviser.

The broadcast news curriculum is supported by a complete teleproduction facility, including television and radio studios and associated control room, video and audio tape assembly and editing areas, and a videotape editing facility. However, the focus

and the thrust of instruction in the broadcast news curriculum stresses basic news writing, editorial judgment, and the principles and practice of radio and television news. The curriculum integrates the mechanics of broadcast journalism with the ethical principles and norms exhibited by professionals. Such preparation helps students to develop their own communicative skills and to appreciate radio, television, cable, and motion pictures as communicative and journalistic arts. Additionally, these studies challenge the student's ability to evaluate and criticize broadcast media functions, performance, responsibilties, and influence in society.

Students entering this program must pass a microphone check on the oral delivery of news.

Professional staff members of WVU's Office of Radio, Television, and Telecommunications Services and WVU Extension and Public Service Radio- TV hold joint appointments and teach in some broadcast journalism courses.

Journalism Education Curriculum

The School of Journalism has worked for a number of years with journalism teachers and administrators in West Virginia schools to improve journalism instruction and school publications. An even greater effort has been made over the past decade through regional high school workshops, critiques of school papers, the West Virginia High School Journalism Competition, and individual consultation with schools by members of the School of Journalism faculty.

One of the outgrowths of these cooperative effort has been a certification program in Journalism. The School of Journalism provides courses for that program in the WVU College of Human Resources and Education. In 1990, the West Virginia Student Press Association brought its annual meeting to WVU and, in the future, will be co-sponsored by the School of Journalism. Approximately 500 West Virginia high school students and advisers attend this conference.

News-Editorial Curriculum

Robert M. Ours, Ph. D., Coordinator

The news-editorial curriculum teaches fact-gathering, news and feature writing, and the various skills of editing. The sequence stems from the first courses offered in journalism at WVU.

Most news-editorial graduates have found employment with newspapers, magazines, and other publications or with the international press associations. Other graduates, however, have gone into broadcasting or public relations or hold writing and editing positions in the professions, scientific fields, business, industry, and government.

As a condition of graduation, news-editorial students are required to have 200 or more column-inches of writing published in campus or off-campus news media. News-editorial students most frequently minor in political science, history, English, sociology and anthropology, psychology, or economics.

Public Relations Curriculum

Ivan R. Pinnell, Ph.D., Coordinator

Public relations offers challenging opportunities to align the interests of industrial, educational, military, or charitable organizations with those of their publics.
The curriculum is organized to provide a comprehensive familiarity with specialized forms (brochures, reports, slides, speeches, etc.). In addition to public relations, students learn principles of advertising and photography.

Public relations majors are encouraged to select minors that will provide a deeper understanding of personal and interpersonal relationships (political science, psychology, sociology and anthropology) or a minor that will enhance the projected area of practice (general business, education, or science).

Curriculum Requirements
The following are suggested annual progressions. Scheduling some courses may vary.

Advertising

First Year	*Hrs.*	*Second Year*	*Hrs.*
English 1	3	Journ. 15	3
English 2	3	Foreign Language **	6
Library Science 1	1	History 1/2 or 52/53	6
Journalism 1	3	Economics 54/55	6
Humanities 1/2/3/4/5/10/11	6	Accounting 51	3
Political Science 2	3	Advertising 113	3
Math 3/4/14/15/16/28/128	3	Stat. 101/201, Econ. 125 or other statistics course	3
Science*	8	Journalism 120	3
Psychology 1	3	Sociology & Anthropology 5/51	3

Third Year	*Hrs.*	*Fourth Year*	*Hrs.*
Advertising 115	3	Advertising 259	3
Political Science 120	3	Journalism 299	2
English (Literature)	6	Minor (upper division)	6
Psychology 101/151	3	Adv/BN/Journ/N-E/PR Elect.	4-7
Philosophy 1/10	3	General Elective	5-8
Advertising 203	3		
Journalism 221	3		
Minor (upper division)	6		
Business Administration 130	3		
General Elective	3		

Broadcast News

First Year	*Hrs.*	*Second Year*	*Hrs.*
English 1	3	Journalism 15	3
English 2	3	Foreign Language**	6
Library Science 1	1	History 1/2 or History 52/53	6
Journalism 1	3	Economics 54/55	6
Humanities 1/2/3/4/5/10/11	6	Accounting 51	3
Political Science 2	3	Broadcast News 117	3
Math. 3/4/14/15/16	3	Statiatics 101/201, Economics 125 or other Statistics course	3
Science*	8	Speech Pathology & Audiology 80	3
Psychology 1	3	Sociology & Anthropology5/51	3

Third Year	*Hrs.*	*Fourth Year*	*Hrs.*
Journalism 141	3	Broadcast News 287	3
Political Science 120	3	Journalism 299	2
English (Literature)	6	Minor (upper division)	6
Psychology 101/151	3	ADV/BN/J/NE/PR Electives	1-4
Philosophy 1/10	3	General electives	8-11
Broadcast News 185	3		
Journalism 221	3		
Minor (upper division)	9		
News Editorial 228	3		

News Editorial

First Year	*Hrs.*
English 1	3
English 2	3
Library Science 1	1
Journalism 1	3
Humanities 1/2/3/4/5/10/11	6
Political Science 2	3
Math 3/4/14/15/16/28/128	3
Science*	8
Psychology 1	3

Second Year	*Hrs.*
Journalism 15	3
Foreign Language**	6
History 52/53	6
Economics 54/55	6
Accounting 51	3
Journalism 18	3
Statistics101, 201, Economics 125, or other Statistics course	3
Journalism 120	3
Sociology & Anthropology 5/51	3

Third Year	*Hrs.*
Journalism 19	3
Political Science 120	3
English (Literature)	6
Psychology 101/151	3
Philosophy 1/10	3
News Editorial 118	3
Journ. 221,NE 220, 230	3
Minor (upper division)	6
Political Science 160	3
News Editorial 227/228	3

Fourth Year	*Hrs.*
News Editorial 128	3
Journalism 299	2
Minor (upper division)	6
ADV/BN/J/NE/PR Electives	1-4
General Electives	8-11

Public Relations

First Year	*Hrs.*
English 1	3
English 2	3
Library Science 1	1
Journalism 1	3
Psychology 1	3
Math 3/4/14/15/16/28/128	3
Science*	8
Political Science 2	3
Humanities 1/2/3/4/5/10/11	6

Second Year	*Hrs.*
Journalism 15	3
Public Relations 111	3
Foreign Language	6
History 1/2 or 52/53	6
Economics 54/55	6
Accounting 51	3
Journalism 120	3
Statistics 101/120, Economics 125 or other statistics course	3
Sociology & Anthropology 5/51	3

Third Year	*Hrs.*
Journalism 18	3
Political Science 120	3
Psychology 101/151	3
Philosophy 1/10	3
Public Relations 19	3
Journalism 221	3
Business Administration 120	3
Minor (upper division)	6
Speech Pathology & Audiology 80	3
English (Literature)	6

Fourth Year	*Hrs.*
Public Relations124	3
Journalism 299	2
Public Relations 222	3
Minor (upper division)	6
ADV/BN/J/NE/PR	1-4
General Electives	5-8

*Two science courses must be taken in sequence (e.g., Biol. 1/3 and 2/4 or Geol. 1/2 and 3/4.)
**In one language.

Faculty

Professors

John H. Boyer, Ph.D. (U. Mo.). Newspaper management, Media law, Women and the media.
Charles F. Cremer, Ph.D. (U. Iowa). Broadcast journalism principles, Technologies and practices.
Robert M. Ours, Ph.D. (C. Wm. & Mary). Journalism history, Magazine writing, News and feature writing.
Emery L. Sasser, Ph.D. (U. Ill.). Dean. News writing, Public opinion.
William O. Seymour, M.A. (E. Tex. St. U.). Photojournalism.

Associate Professors

Mel Elbaum, B.B.A. (CUNY). Advertising media, copywriting, campaigns.
Richard A. Schreiber, Ph.D. (U. Mo.). Advertising, Communication theory, Research.
C. Gregory Van Camp, M.S.J. (WVU). Broadcast journalism.
Pamela D. Yagle, M.S.J. (WVU). Reporting, Language skills.

Assistant Professors

Patricia C. Findley, M.A. (Cal. St. U.). Reporting, Editing, Production.
Ancella Livers, M.S.J. (Northwestern U.). Reporting, Editing.
Theodore Lustig, M.A. (NYU). Public relations
Christine M. Martin, M.A. (U. Maryland). News and feature writing, Journalism history.
James C. Paty, Ph.D. (FSU). News and feature writing, Editing, Production.
R. Ivan Pinnell, Ph.D. (U. Denver). Public relations
Donald E. Silcott, M.A. (U. Iowa). Broadcast reporting, Language skills.

Emeriti Professors

Paul A. Atkins, M.A. (U.Va.).
Donovan H. Bond, M.A. (WVU).
Harry W. Elwood, M.S. (Northwestern U.).
Guy H.Stewart, Ph.D. (U.Ill). Dean.
William R. Summers, Jr., M.A. (U Mo.).

Adjunct Assistant Professors

Dennis R. Godfrey, M.A. (WVU). Adjunct. Broadcast news, Public affairs.
Jack M. Johns, M.S.J.(WVU). Adjunct. Broadcast news, Production.

School of Medicine

Robert M. D'Alessandri, M.D., Dean

Medical Technology

Jean D. Holter, Ed.D. (WVU), Professor and Program Director.

Degree Offered

Bachelor of Science in Medical Technology

Nature of Program

The undergraduate program in medical technology is administered by the School of Medicine. Students are admitted into the bachelor of science program after completing two years of premedical technology in an accredited college or university. The WVU Medical Technology Program is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association. Graduates are eligible for certification by the Board of Registry of the American Society of Clinical Pathologists (ASCP) and by the National Certification Agency for Medical Laboratory Personnel (NCA).

The undergraduate curriculum includes the premedical technology program, which is offered in the WVU College of Arts and Sciences and at Potomac State College in Keyser, and the medical technology program offered in the School of Medicine.

Since the last two years are professional in nature, students must be enrolled in the WVU School of Medicine for this entire period. The work of the junior year (the first year in the medical technology program) includes courses to introduce the student to the medical sciences and courses to prepare the student for the work of the senior year. During the senior year (the second year in the medical technology program), the student receives both didactic instruction and practical experience in Ruby Memorial Hospital laboratories (WVU Hospitals, Inc.). Students may be required to fill part of their clinical rotations at an extramural site in West Virginia.

Certified Technicians

A program is available for certified medical laboratory technicians who desire to complete requirements for a Bachelor of Science degree. Further information may be obtained by contacting the Medical Technology Program Office.

A part-time curriculum is available for the third and fourth years of the program. Students must meet the admission requirements and application deadlines for full-time students. For further information, contact the Medical Technology Program Office.

Admission to the Pre-Medical Technology Program

Students in the pre-medical technology program must meet the admission criteria of West Virginia University and are advised by the Academic Advising Center. Qualified applicants may enter the pre-medical technology program at the beginning of any semester, but the professional sequence outlined is based on entrance in the fall semester of year three. Admission to the pre-medical technology program does not assure admission to the professional program. We recommend that prospective students take mathematics, chemistry, physics, and biology in high school.

Do not take courses such as bacteriology, parasitology, and anatomy until you complete the sophomore year. We recommend a foreign language for students who plan to do graduate work.

Admission to the Professional Program

Requirements for admission to the medical technology programs includes course requirements, grade-point average, a personal interview, letters of recommendation, and scores on the Allied Health Professions Admission Test (AHPAT).

The course requirements (prerequisites) are:

English: 6 hours of composition and rhetoric (Eng.1 and 2)
Biology: 8 hours of general biology (Biol. 1,2,3,and 4)
Chemistry: 12 hours to include 8 hours of inorganic (Chem. 15 and 16) and 4 hours of organic (Chem. 131)*
Physics: 8 hours of general physics (Phys. 1 and 2)
Mathematics: 6 hours to include minimal requirements of algebra and trigonometry (Math. 3 and 4)
LSP: 21-24 hours of electives; (12 hours Cluster A and 12 hours Cluster B)

*Transfer students must complete an organic chemistry course(s) (8 hours) that includes aliphatic and aromatic compounds. The course must include a laboratory.

Applicants should have a minimum grade-point average of 2.5 (cumulative and science). Applicants may be admitted on probation if their grade-point average (cumulative or science) is less than 2.5. Applicants with less than a 2.0 Grade point average, either cumulative or science, will not be admitted. A grade-point average of 2.5 or above does not necessarily assure admission. A personal interview with the Medical Technology Admission Committee is required. Two letters of recommendation from instructors in physics, chemistry, or biology are required. Scores on the Allied Health Professions Admissions Test are required. Admission of international students is in compliance with West Virginia University regulations. At least one science course (chemistry, physics, or biology) must be completed at an institution of higher education in the United States.

Application Procedure

Application forms for admission to the professional program are available after December 1 from the office of the Assistant Director of Admissions and Records, WVU Health Sciences Center, Morgantown, WV 26506. There is an application fee of $10.00. The priority date for returning the application form is January 15. The deadline date is February 1 if the student expects to enter the program the next fall semester. Students at West Virginia University or Potomac State College are not transferred automatically from the preprofessional course to the professional course. Students are selectively admitted to the program.

PREMEDICAL TECHNOLOGY Curriculum Plan

First Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Chem. 15 *Inorganic*	4	Chem. 16 *Inorganic*	4
Elective*	3	Engl. 1. *Comp. & Rhet.*	3
Math. 3 *Algebra*	3	Elective*	3
Biol. 1	4	Biol. 2	4
M. Tec. 1**	2	Math 4 *Trigonometry*	3
	16		17

Second Year

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Electives*	9	Chem. 131. *Organic*	4
Phys. 1	4	Electives*	6-9
Engl. 2 *Composition and Rhetoric*	3	Phys. 2	4
	16		14-17

*Electives from Cluster A and Cluster B are to be selected to meet the Liberal Studies Program requirements.

**M. Tec. 1 is not a required subject. It is highly recommended that all students take this course. M. Tec. 1 is offered each semester.

Third Year (MEedical Technology 1)

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
M. Tec. 100	4	Parasitol. 224	4
M. Tec. 202	2	M. Bio. 223	5
Bioch. 139	5	M. Tec. 101	4
Physi. 241	4	M. Tec. 210	1
Elective	3	M. Tec. 291	2
		M. Tec. 229	1
	18		17

Fourth Year
(Medical Technology II)

Students receive didactic and clinical instruction in the University Hospitals, Inc. laboratories after completion of the junior year. The course of study begins with the summer session and covers three academic semesters. If the student has excessive absences during the senior year, competencies not completed must be made up at the end of the school year.

Students register for the following courses during the three semesters of study.

M. Tec. 200. *Orientation*	No Credit
M. Tec. 220. *Immunohematology and Blood Banking*	2
M. Tec. 221. *Immunohematology and Blood Banking Laboratory*	5
M. Tec. 230. *Clinical Chemistry*	2
M. Tec. 231. *Clinical Chemistry Laboratory*	5
M. Tec. 240. *Clinical Hematology*	2
M. Tec. 241. *Clinical Hematology Laboratory*	5
M. Tec. 250. *Clinical Microbiology*	2
M. Tec. 251. *Clinical Microbiology Laboratory*	5
M. Tec. 260. *Instrumentation*	2
M. Tec. 265. *Laboratory Management*	2
M. Tec. 270. *Clinical Microscopy*	1
M. Tec. 271. *Clinical Microscopy Laboratory*	1
M. Tec. 275. *Medical Relevance of Laboratory Analysis*	1
M. Tec. 280. *Clinical Immunology*	3
	38

Graduation Requirements
Junior Year

A student must maintain a grade-point average of 2.0 for each semester to advance to the senior year. Any student with one F or more than two D's at the end of the junior year will be suspended from the program. The Junior year Academic Standards Committee must recommend any student for advancement to the senior year. A satisfactory grade-point average does not assure advancement.

Senior Year

A student must maintain a grade-point average of 2.0 for each semester of the senior year. Graduation requires satisfactory completion of all academic work. Graduation requires the recommendation of the faculty of the School of Medicine.

Career Opportunities

Notices of employment opportunities are received by the program's office and posted for student use.

The market for medical technology graduates varies from state to state and in areas in a particular state. Many graduates are employed in a hospital or clinical

laboratory setting as a generalist while others specialize in a particular area such as chemistry, microbiology, blood banking or hematology. Other graduates work in physicians' offices, clinics, reference laboratories, public health agencies, research, industry, or education.

Faculty
Anna August, B.S. (Ind. U. of Penn.). Adjunct Instructor.
Nancie Blehschmidt, B.S. (WVU). Instructor.
Bonnie Brammer, B.S. (WVU). Adjunct Instructor.
Cathy Browning, B.S. (WVU). Adjunct Instructor.
Joyce Compton, M. S. (WVU), Adjunct Assistant Professor.
Barbara J. Gutman, M.Ed. (U. Pitt), Associate Professor.
Marta J. Henderson, Ed.D. (WVU), Associate Professor.
Jean D. Holter, Ed.D. (WVU), Professor and Program Director.
Frances Biller Juriga, M. S. (WVU), Assistant Professor.
Karen S. Long, M. S. (WVU), Assistant Professor.
Marie Miller, B.S. (WVU). Adjunct Instructor.
Dane W. Moore, Jr., M.S. (WVU), Professor *Emeritus.*
Judy Mull, M. S. (WVU), Adjunct Assistant Professor.
Joyce Nutter, B. S. (Alderson-Broaddus), Adjunct Instructor.
Nathaniel F. Rodman, M.D. (U. Penn.), Professor.
Harry L. Taylor, Jr., M.D. (Med. Col. of GA). Associate Professor.

Division of Physical Therapy

S. L. Burkart, PT, Ph.D., Professor and Chairperson.

Degree Offered
B.S. in Physical Therapy

Nature of Program

The WVU Physical Therapy Program in the Division of Physical Therapy was established in 1970 under the auspices of the School of Medicine to help meet the need for physical therapists in West Virginia. The program is accredited by the American Physical Therapy Association, a specialized accrediting body recognized by the Council on Postsecondary Accreditation, and accepts one class each year for the final two years of a baccalaureate degree program.

Students admitted into the program complete six semesters (two are summer sessions) of combined classroom, laboratory and clinical education plus a minimum of 18 weeks of full-time supervised clinical practice in various clinics in West Virginia and other states. A Bachelor of Science degree is awarded to those completing the program, and entitles the graduate to apply for examination for state licensure. A license to practice physical therapy is required by all states.

Admission Requirements

Recommended high school preparation for physical therapy includes courses in biology, chemistry, algebra, trigonometry, physics, and social sciences. Typing and familiarity with computers are advised.

Because individualized instruction in laboratories and clinics is an essential component of the program, enrollment must be limited. All students who wish to enter the program must apply for admission and must have completed or be enrolled in the courses listed on the next page. These courses are available at most junior and senior colleges and usually require two years to complete. Students with degrees in other fields are welcome to apply, but must also complete these courses.

Courses Required for Application	Sem. Hr.	WVU Courses
Pre-Physical Therapy Courses		
Biology (with lab)	8	Biol. 1, 2 &3, 4
Chemistry (with lab)	8	Chem. 15 & 16
Physics (with lab)	8	Phys. 1 & 2
Introductory Psychology	3	Psych. 1
Developmental Psychology	3	Psych. 141
Introductory Statistics	3	Stat. 101
WVU Liberal Studies Requirements		
English Composition	6	Engl. 1 & 2
Cluster A courses*	12	
(Humanities and Fine Arts; courses in three disciplines, including two courses in one discipline)		
Cluster B courses*	6	
(Social and Behavioral Sciences; two courses in two different disciplines, neither of which is psychology)		

*See Liberal Studies section of the catalog for specific courses acceptable in each Cluster. Three hours in either Cluster A or Cluster B courses must focus substantially on the study of a foreign or minority culture or on women and/or issues of gender.

The courses listed are minimum requirements for application. Other recommended courses are human anatomy and human nutrition. Students are encouraged to pursue studies in additional courses of interest. Students who wish to substitute a course for one of those listed should contact the Division of Physical Therapy for permission and provide a written description of the proposed substitute.

Applicants must have a minimum GPA of 2.75 in the pre-physical therapy courses with at least a grade of C in each course, and a minimum cumulative GPA of 2.6 in all college courses. All applicants must have completed the Allied Health Professions Admission Test, submit ACT or SAT scores, and submit two letters of recommendation from physical therapists (not relatives) with whom they have worked in clinical settings. A minimum of 80 hours of clinical volunteer or work experience is recommended. It is suggested that this experience be in at least two different settings.

Preference is given to West Virginia residents; non-residents who have attended a West Virginia college or university, or who have other ties to the state, may also be considered.

Applicants who complete any of their pre-requisite courses at a college or university outside of West Virginia must submit a catalog or photocopy of the catalog description for all pre-requisite courses taken.

Application forms are available beginning December 1 from the Office of Admission and Records, WVU Health Sciences Center, Morgantown, WV 26506. Morgantown, WV 26506. All application materials must be received from the applicant no later than March 1. Qualified applicants are interviewed by the Physical Therapy Admissions Committee. Those considered to demonstrate the greatest potential for success are recommended for admission into the program. A student who does not meet all application requirements, but who believes extenuating circumstances justify consideration, may petition the Committee for an interview.

Graduation Requirements

Students admitted into the program must complete all required courses of each term with a grade of at least C or P in each, and must maintain a minimum GPA of 2.5 each term. Any student who does not meet these requirements may be placed on probation, suspended, or dismissed from the program. The Division of Physical Therapy reserves the right to suspend or dismiss any student who does not perform at an overall level considered satisfactory for patient care.

In the second semester of the junior year, the student will spend one day each week for ten weeks in a clinical setting under the supervision of a physical therapist.

During summer session one after the junior year, the student will be in a clinical rotation eight hours a day for three weeks each semester.

After satisfactorily completing all the course work, the student will participate full time for a minimum of 18 weeks in three different clinical settings. Clinical affiliation sites are in West Virginia and other locations.

Students must be prepared to pay for travel, meals, and lodging while participating in clinical rotations.

Suggested Physical Therapy Curriculum

JUNIOR YEAR

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Path. 128	2	Anat. 308	2
Physi. 241	4	Ph.Th. 110	3
Ph.Th. 111	4	Ph.Th. 112	3
Ph.Th. 117	1	Ph.Th. 114	3
Ph.Th. 120	3	Ph.Th. 116	3
Ph.Th. 118	3		
	14		15

Summer Session 1	*Hrs.*
Ph. Th. 116	0-3

SENIOR YEAR

First Semester	*Hrs.*	*Second Semester*	*Hrs.*
Ph.Th. 271	4	Ph.Th. 270	4
Ph.Th. 273	4	Ph.Th. 272	2
Ph.Th. 275	3	Ph.Th. 274	3
Ph.Th. 277	2	Ph.Th. 276*	3
Ph.Th. 279	4	Ph.Th. 278	5
Ph.Th. 281	1	Ph.Th. 282	1
	18		18

Summer I	*Hrs.*	*Summer II*	*Hrs.*
Ph.Th. 290	0-3	Ph.Th. 290	0-3

*Not required.

Fall	*Hrs.*
Ph.Th. 290	0-3

College of Mineral and Energy Resources

John L. Schroder, Jr., M.S.E.M. (WVU), Dean.
Royce J. Watts, M.S. (WVU), Associate Dean—Administration/Academic Affairs.

Degrees

Bachelor of Science in Engineering of Mines
Bachelor of Science in Petroleum Engineering
Bachelor of Science with a major in Mineral Processing Engineering

Nature of Program

Mineral engineering graduates enjoy a multitude of career opportunities in our nation's most vital industries as the demand for well trained professionals in the various specialization areas continues to be very strong. As minerals and fossil fuels become more scarce, international politics force a greater emphasis upon self reliance in these areas, and the mineral engineer's role continues to grow in significance and importance.

Mining engineering is the profession which is responsible for the extraction of solid fuels and minerals, such as coal, oil shales, precious metals, and ores of iron, copper, aluminum, and uranium, etc., from the earth's crust in ways which protect the environment and the people involved while allowing maximum recovery of our non-renewable natural resources.

Petroleum and natural gas engineering students are trained in the finding, drilling, production, and transportation of oil and natural gas.

Mineral processing engineering is a broad field that encompasses all areas involving the handling and treatment of ores, minerals, and solid fuels after extraction from the earth's crust to prepare them for marketing or further use. Topics studied include coal cleaning and preparation, energy conversion processes, environmental and economic concerns, mineral beneficiation, and extractive metallurgy.

Mineral resource economics studies the economics of the mineral industries, commodity markets, and the economic evaluation of resources in their broader aspects as affected by engineering technology, earth sciences, and national policy. Thus it ties together the geology of resources, the engineering of extraction and conversion processes, and the demands of industrial societies through mineral markets and trade. The particular strength of this discipline is the use of models to analyze mineral policy impacts and provide forecasts of future mineral related economic behavior.

The College of Mineral and Energy Resources is in close proximity to major industrial, mining, and petroleum and natural gas producing areas. A number of the largest coal, oil, and gas companies throughout the nation provide meaningful and financially rewarding summer employment for students enrolled in the college's programs. These training opportunities have often led to professional positions upon graduation. The college has cooperative programs with several companies which permit the students to attend WVU one semester and work for the company the other semester.

ABET Accreditation

The Accreditation Board for Engineering and Technology (ABET) is recognized by the U.S. Department of Education and the Council on Post- secondary Accreditation (COPA) as the sole agency responsible for accreditation of educational programs leading to degrees in engineering. ABET accomplishes its accreditation mission through one of its commissions, the Engineering Accreditation Commission (EAC). The Engineering of Mines and the Petroleum and Natural Gas Engineering baccalaureate programs are accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology.

Admission
General Requirements

All prospective students must be qualified for admission to WVU and present secondary school credits for two units of algebra, one unit of geometry, one unit of trigonometry or advanced mathematics, and one unit of chemistry.

All students are required to take the American College Testing Program (ACT) tests or the Scholastic Aptitude Test (SAT) and submit official copies of test scores to the WVU Office of Admissions and Records prior to the admission decision.

West Virginia Residents: Admission to the College of Mineral and Energy Resources is granted based upon achievement of a high school grade-point average of 3.0 or better at graduation and a Standard ACT Mathematics score of 20 (SAT Quantitative 430) or higher, or a high school grade-point of 2.0 or better at graduation and a Standard ACT Mathematics score of 24 (SAT Quantitative 500) or higher.

Out-of-State Residents: Admission to the College of Mineral and Energy Resources is granted based on achievement of a high school grade-point average of 2.25 or better at graduation and a Standard ACT Mathematics score of 24 (SAT Quantitative 500) or higher.

Transfer Students

Students who wish to be considered for transfer admission to the College of Mineral and Energy Resources from another WVU college or school, or an out-of-state college or university, must satisfy both the WVU general admission requirements and as a minimum have successfully completed Math. 15 and 16 and Chem. 15 and 16 or Physics 11 and 12 (or their equivalents).

Admission Petitions

Students not meeting the minimum requirements as described above, but who demonstrate special aptitude for engineering studies, may request to be admitted to the College of Mineral and Energy Resources by written petition to the Dean. Following receipt of the written petition, the applicant will be scheduled for a personal interview with the appropriate departmental chairperson if he/she desires.

Requirements for Degrees

To be eligible to receive a bachelor's degree, a student is required to satisfactorily complete the number of semester hours of work as specified in the curriculum of the program leading to the degree for which the student is a candidate, plus the requirements of the University Liberal Studies Program.

A student admitted to a bachelor's degree program in the College of Mineral and Energy Resources after May 15, 1984, must achieve a grade-point average of 2.25 or better and a grade of C or better in all courses completed in the student's major department (i.e., Engineering of Mines, Petroleum and Natural Gas Engineering, or Mineral Processing Engineering) in order to qualify for the bachelor's degree.

College of Mineral and Energy Resources
Undergraduate Liberal Studies Program Requirements

All engineering undergraduate students must satisfy the WVU Liberal Studies Program (LSP) requirements. They must also satisfy the College of Mineral and Energy Resources LSP requirements, which encompass the University rules. These include the following:

1. Each student must take 12 credits of LSP Cluster A courses and 12 credits of Cluster B courses.

2. Sixteen of this total of 24 credits must be from the College of Mineral and Energy Resources approved LSP list.

3. The 12-credit hours in each cluster must include courses taken in at least three departments. Two four-credit courses and one three-credit course may be substituted in lieu of 12 credit hours.

4. Advanced Air Force ROTC students may substitute AFROTC 105 and 106 for Psych. 1 and 164, respectively. They may also substitute both AFROTC 107 and 108 for a total of three hours of approved Political Science. This statement pertains to Air Force ROTC only. No equivalent agreement exists with the Army ROTC.

5. Several University-approved LSP courses have not been listed as College of Mineral and Energy Resources approved LSP courses. If students from other colleges or schools who have taken these courses transfer into the College of Mineral and Energy Resources, these courses may be considered by the departments and the Provost and Vice President for Academic Affairs for inclusion as College of Mineral and Energy Resources approved LSP courses on a case-by-case basis.

6. Courses listed as independent study or special topics (i.e., those courses for which a full course description is not given) are not listed as College of Mineral and Energy Resources-approved LSP courses. These courses will also be individually considered by the departments and the Provost and Vice President for Academic Affairs for inclusion as College of Mineral and Energy Resources approved LSP courses on a case-by-case basis.

Please note that not all University-approved LSP courses in humanities and social sciences departments are included in the College of Mineral and Energy Resources LSP list.

Liberal Studies Program Courses Not Approved by the College of Mineral and Energy Resources

LSP Cluster A:

English 30
Landscape Architecture 112
Philosophy 106
Math. 161, 125

Any foreign language unless two semesters of the same language are successfully completed.Contact your advisor for other restrictions.

LSP Cluster B:

Communication Studies 134, 135
Geography 2
Resource Management 1
Sociology and Anthropology 7, 137, 152, 162
Recreation and Parks 43

Contact your advisor for other restrictions.

Curricula

The first two years of instruction are very similar in the programs. During this period, the student is given a thorough grounding in mathematics, geology, physics, and chemistry. During the third and fourth years, the student is given instruction in the engineering sciences as well as in professional subjects. Also, studies in the humanities are continued, with the student being permitted to elect a reasonable proportion of the subjects to be studied.

The mineral and energy resources programs offer professional and general electives at both the lower- and upper-division levels to all students in the areas of mineral and energy economics, mineral resources appraisal and exploration, design of mineral process operations, and models of mineral commodity markets.

Bachelor of Science in Engineering of Mines

Syd S. Peng, Ph.D. (Stanford U.). Chairperson. Ground control, Longwall mining.

Mining engineering deals with discovering, extracting, beneficiating, marketing, and utilizing mineral deposits from the earth's crust. The role of the mining engineer may be quite diversified, and the field offers opportunities for specialization in a large number of technical areas. The trained professional in this field is well versed in mining and geology and also in the principles of civil, electrical, and mechanical engineering as applied to the mining industry. With the present trend toward the use of engineers in industrial management and administrative positions, the mining engineer's training also includes economics, business, personnel management, and the humanities.

Professional technical courses include surface and underground mining systems, engineering principles of blasting, materials handling, ventilation, roof control, rock mechanics, mining equipment, coal and mineral preparation, plant and mine design, geology, and water control. In addition, students receive a foundation in the managerial, financial, environmental, and social aspects of the operation of a mining enterprise.

In the fourth year, the student may specialize in such career areas as coal mining, ore mining, or other phases of mining engineering through the proper selection of design problems and electives. The student will be assigned an adviser who will assist in this phase of the program.

Local coal fields, mines, and preparation plants provide extensive opportunity for research, instruction, and field work in a real-work situation.

A student admitted to the program must achieve a grade-point average of 2.25 or better and a grade of C or better in all mining engineering (E.M.) courses in order to qualify for the bachelor's degree.

Faculty

Professors

Lawrence Adler, Ph.D. (U. Ill.). Mining methods, Exploration.
Kenneth K. Humphreys, M.S.Ch.E. (WVU). Minerals. Adjunct. Cost engineering, Coal preparation, Energy constant analysis.
Jay H. Kelley, Ph.D. (Penn St. U.). Distinguished. *Emeritus.*
A. Wahab Khair, Ph.D. (Penn St. U.). Rock mechanics, Ground control.
Ronald R. Rollins, Ph.D. (U. Utah). Explosive applications, Explosives theory.
Y. J. Wang, Ph.D. (Penn St. U.). Mine ventilation, Computer application, Mine design.

Associate Professors

Donald M. Bondurant, M.S.E.M. (WVU). *Emeritus.*
R. Larry Grayson, Ph.D. (WVU). Mine management/ventilation, Health and safety.
Joseph D. McClung, M.S.E.M. (U. Pitt). *Emeritus.*

Mining Engineering (B.S.E.M.)

First Year			
First Semester	Hrs.	Second Semester	Hrs.
Math. 15	4	Math. 16	4
Chem. 15	4	Chem. 16	4
Engl. 1	3	LSP	3
Geol. 1	3	Phys. 11	4
Geol. 2	1	M. 2	3
M. 1	3		
	18		18

Second Year			
First Semester	Hrs.	Second Semester	Hrs.
Math. 17	4	Math. 18	4
Geol. 151	4	Phys. 12	4
M.A.E. 41	3	M.A.E. 42	3
E.M. 103	3	M. 281	3
E.M. 102	1	E.M. 104	3
LSP	3		
	18		17

Miner's Safety and Qualification Course—0 hr.

Third Year			
First Semester	Hrs.	Second Semester	Hrs.
E.M. 206	3	E.M. 225	3
E.C.E. 101	3	E.M. 231	3
M.A.E. 43	3	M.P.E. 217	3
M.A.E. 114	3	M.A.E. 101	3
Stat. 201	3	LSP	6
Engl. 2	3		
	18		18

FourthYear			
First Semester	Hrs.	Second Semester	Hrs.
E.M. 211	4	E.M. 251	3
E.M. 226	3	E.M. 296	4
E.M. 242	3	Prof. elect.	3
E.M. 271	3	LSP	6
LSP	6		
	19		16

Total: 141 hr.

Professional Electives: E.M. 207, 214, 276, 286, 291, 295.

Bachelor of Science in Petroleum and Natural Gas Engineering

Samuel Ameri, M.S. Pet.E. (WVU)—Chairperson. Geophysical well log interpretations, Reservoir engineering, Design and application.

Petroleum and natural gas engineering is concerned with design and application aspects of the discovery, production, and transportation of oil and gas resources. Professionals in this field must have a thorough understanding of the geological principles relating to the occurrence, discovery, and production of fluid hydrocarbons. The petroleum and natural gas engineer must know and be capable of applying both conventional engineering design principles as well as those pertaining specifically to the field of petroleum and natural gas engineering. These are developed in the petroleum engineering courses in the curriculum. In addition, a strong foundation in mathematics and the sciences broadens the future engineer's professional capabilities. Because many engineers will be employed as supervisors or executives, managerial and social skills are also emphasized.

Students are offered the opportunity to enter all phases of the petroleum and natural gas industry in meaningful and important jobs, continue their education towards advanced degrees, or—in some cases—pursue a combination of professional employment and continued education.

In the senior year, electives are offered in which the student may obtain additional depth of knowledge in specific areas of petroleum and natural gas technology. Each student is individually assisted in course selection by an adviser who is a member of the Petroleum and Natural Gas Engineering faculty.

Students gain practical experience and first-hand knowledge of many aspects of petroleum and natural gas engineering through close proximity to the industry in West Virginia and surrounding states. Production sites, secondary and enhanced oil recovery projects, compressor stations, gas storage fields, and corporate offices all provide excellent opportunities for study. Additional experience is provided through modern well equipped laboratories within the department and the University. Students are urged to gain field experience through summer employment in the industry.

A student admitted to the program must achieve a grade-point average of 2.25 or better and a grade of C or better in all petroleum and natural gas engineering (Pet. E.) courses in order to qualify for the bachelor's degree.

Faculty

Professors

Robert W. Chase, Ph.D. (Penn St. U.). Adjunct. Natural gas engineering.

James A. Wasson, M.S.P.N.G. (Penn St. U.). Reservoir engineering, Enhanced oil recovery.

Larry Woodfork, A.M. (Ind. U.). Adjunct.

Associate Professor

Khashayar Aminian, Ph.D. (U. Mich.). Natural gas engineering, Reservoir simulation.

Assistant Professor

H. Ilkin Bilgesu, Ph.D. (Penn St. U.). Drilling engineering.

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Petroleum and Natural Gas Engineering

First Year

First Semester	Hrs.	Second Semester	Hrs.
Chem. 15	4	Chem. 16	4
Math. 15	4	Math. 16	4
M. 1	3	M. 2	3
Geol. 1	3	Physics 11	4
Engl. 1	3	LSP elect.	3
	17		18

Second Year

First Semester	Hrs.	Second Semester	Hrs.
Phys. 12	4	Chem. 141	3
Math. 17	4	Math. 18	4
M.A.E. 41	3	M.A.E. 43	3
Geol. 151	4	M.A.E. 114	3
Engl. 2	3	Stat. 201	3
	18		16

Third Year			
First Semester	Hrs.	Second Semester	Hrs.
Pet.E. 232	3	Pet. E. 210	4
M. 281	3	Pet. E. 212	1
M.A.E. 42	3	Pet. E. 233	3
M.A.E. 101	3	Econ. 55	3
Econ. 54	3	Geol. 272	3
LSP elect.	3	LSP elect.	3
	18		17

Fourth Year			
First Semester	Hrs.	Second Semester	Hrs.
Pet.E. 211	3	Pet.E. 295	3
Pet.E. 234	3	Pet.E. 299	3
Pet.E. 235	3	Prof. elect.	4
Pet.E. 241	3	LSP elect.	9
Pet.E. 244	1	Pet.E. 270	4
	17		19

Total: 140 hr.

Recommended Professional Electives: Pet.E. 224, 262, 271.
For qualified students only: Pet. E. 340.
LSP Electives: University LSP Curriculum.
The non-technical electives must be chosen so as to meet the University LSP requirements and the ABET guidelines.

Bachelor of Science in Mineral Processing Engineering

Syd S. Peng, Ph.D. (Standford U.). Acting Chairperson. Longwall mining.

Mineral Processing Engineering provides energy-related engineering education and research opportunities to prepare professionals who will design, direct, and operate the processes to produce refined products and materials from raw ores and other resources. The program is designed to graduate competent, well-trained students capable of fulfilling the current and future needs of industry and government.

Specific areas include coal cleaning and preparation, coal and coal-waste utilization, environmental problems associated with coal mining and utilization, methods available for pollution control, mineral dressing, hydrometallurgy, and resolution of future energy concerns. Common techniques such as sampling, size reduction, and fine particle separation are presented in detail and beneficiation methods—such as froth flotation, gravity concentration, etc.—are emphasized. Equipment performance and control, flow sheet design, plant design, economics, and pollution control are stressed.

Mineral processing engineering is a challenging field; graduates are much in demand. Potential employers include coal companies, the metallurgical and chemical industries, utility companies, research institutes, universities, and state or federal agencies.

A student admitted to the program must achieve a grade-point average of 2.25 or better and a grade of C or better in all mineral processing engineering (M.P.E.) courses in order to qualify for the bachelor's degree.

Faculty
Professor
Eung Ha Cho, Ph.D. (U. Utah). Coal/Mineral Processing.

Associate Professors

Richard B. Muter, M.S. (WVU). Coal cleaning and preparation. Coal-waste utilization, Coal and mineral analysis.

Felicia F. Peng, Ph.D. (WVU)—Research. Coal fine preparation, utilization, conver sion, Process control and Plant design.

Assistant Professor

David J. Akers, M.S. (WVU)—Adjunct. Coal cleaning, Coal wastes reclamation, Acid mine drainage abatement.

Mineral Processing Engineering

First Year			
First Semester	Hrs.	Second Semester	Hrs.
Chem. 15	4	Chem. 16	4
Math. 15	4	Math. 16	4
Engl. 1	3	Engl. 2	3
Geol. 1	3	M. 2	3
M. 1	3	LSP elect.	3
	17		17

Second Year			
First Semester	Hrs.	Second Semester	Hrs.
Math. 17	4	Math. 18	4
Phys. 11	4	Phys. 12	4
M.A.E. 41	3	M.A.E. 42	3
M.P.E. 217	3	Chem. 131	4
LSP elect.	3	LSP	3
	17		18

Third Year			
First Semester	Hrs.	Second Semester	Hrs.
M. 281	3	E..E. 101	3
M.A.E. 43	3	M.P.E. 221	4
M.A.E. 101	3	M.A.E. 114	3
Prof. elect.	3	LSP elect.	3
M.P.E. 218	4	Chem. 141	3
Chem. 142	1		
	16		17

Fourth Year			
First Semester	Hrs.	Second Semester	Hrs.
M.P.E. 222	3	M.P.E. 220	4
M.P.E. 270	3	M.P.E. 219	3
Engl. 208	3	M.P.E. 250	3
LSP elect.	6	LSP elect.	6
	18		16

Total: 136 hr.

Recommended Professional Electives: M.P.E. 224; Ch.E. 105, 224; plus others approved by the Department. LSP Elective: University Liberal Studies Program.

Additional Faculty

Mineral Resource Economics

Professors

Walter C. Labys, Ph.D. (U. Nottingham). Commodity modeling and forecasting, Mineral trade, Mineral resource development.

William H. Miernyk, Ph.D. (Harvard U.). Benedum. *Emeritus.*

Associate Professor

Thomas F. Torries, Ph.D. (Penn St. U.)—Acting Chairperson. Mineral resource evaluation, Mineral policy, Economics of the coal industry.

Mining Extension Service Associate Professors

Joseph C. Dorton, B.S. (Concord C.). Mine foreman training, Electrical training, Mandatory miner training courses.

Robert L. Halstead, B.S. (U. Charleston, WV). Mine foreman training, Electrical training, Production technology.

Thomas L. Savage, B.S. (Cornell U.). *Emeritus.* Hydraulics.

Assistant Professors

Cynthia M. Bindocci, Ed.D. (WVU). Training material development, Women in coal industry, Historical research of mining tools.

Luther B. Ferguson—Emeritus.

James H. Kincaid, B.S. (WV Tech). Mine foreman training, Surveying, Mine ventilation.

Michael J. Klishis, Ph.D. (WVU). Miner training, Curriculum development.

Mining Extension Agents

David L. Arritt, M.S. (WV COGS). Mine foreman training, Mine management, Mine maintenance.

G. Douglas Elliott, Ed.D. (WVU)—Acting Associate Director. Mine safety and health, Mine management.

Thomas W. Hall, B.S. (Fairmont St. C.). Mine foreman training, Mandatory miner training courses, Mining methods.

William E. Moser, B.S. (Robt. Morris C.). Mine rescue/safety.

Particle Analysis Center Professor

Thomas P. Meloy, Ph.D. (MIT). Benedum. Powder science, Mineral liberation, Plant circuit analysis.

School of Nursing

Lorita D. Jenab, Dean
Jacqueline W. Riley, Assistant Dean

Degree

Bachelor of Science in Nursing

Nature of Program

Dramatic changes are taking place in the nursing field. It has become a challenging career for men and remains a successful career for women. Nursing is practiced with all age groups and in a variety of settings— wherever health is important. Hospitals, schools, homes and community agencies are just some of the possible sites for nursing careers. With experience and additional education, you can enter nursing management in health care agencies, engage in research or teaching, become involved in hospital nursing administration, or the advanced practice of nursing.

Admission Requirements

Admission to the School of Nursing requires at least one year of undergraduate studies at an accredited college or university. The application process may begin after one semester of the prescribed coursework is completed. The recommended pre-nursing courses include:

	Hrs.
Chemistry	8
English composition	3
Introductory sociology	3
Introductory psychology	3
Nutrition	3
Life span growth and development	3
Biology	4
College Algebra	3

Since the B.S.N. is awarded by the University, candidates for the degree must fulfill the Liberal Studies Program requirements as well as School of Nursing requirements. **Admission to the University as a pre-nursing major does NOT guarantee admission to the School of Nursing.**

We recommend that high school students planning to enter nursing take these high school courses:

English	4 years
Social science	3 years
Math	3 to 4 years (including Algebra 1 and 2)
Sciences	3 to 4 years (including biology and chemistry)

High school seniors who meet WVU admission requirements have a cumulative grade-point average of 3.4 or better and have an ACT score (or equivalent SAT) of 22 or higher may qualify for direct admission to the School of Nursing.

Graduation Requirements

The student must maintain a cumulative grade-point average of 2.0 or better in all work attempted; pass all graded nursing courses with a grade of C or better; and pass all required courses.

A student who fails to meet the requirements listed above must present to the adviser an acceptable plan for meeting the requirements. This plan must be within the policies and standards set by the Committee on Academic Standards.

The degree of Bachelor of Science in Nursing (B.S.N.) is conferred upon completion of a minimum of 130-133 hours.

Admissions—Transfer Students to Basic Programs

A student with nursing credit from an accredited college or university is eligible for admission by presenting a record of courses comparable to those required in this curriculum and meeting other School of Nursing admission requirements. Application for transfer students should be initiated three months prior to the beginning of the semester in which they wish to begin nursing courses.

Transcripts and other required materials must be received no later than two months before the start of the entering semester. Apply to: Assistant to Director of Admissions and Records, WVU Health Sciences Center, Morgantown, WV 26506 specifying request for admission as a transfer student.

Program for Registered Nurse Students

The School of Nursing offers graduates of diploma and associate degree nursing programs the opportunity to complete requirements for the baccalaureate degree in nursing at the Morgantown campus, at the Charleston Division of the WVU Health Sciences Center, and by extension at Parkersburg and Beckley. General education credits earned in any accredited college or university may be applied toward the fulfillment of the degree requirements, if the course work is comparable. The continued offering of nursing courses at the various extension sites is dependent upon faculty resources and a minimum enrollment of 15 students in each nursing course.

Registered Nurse (R.N.) applicants are admitted directly to the School of Nursing. Acceptance and placement in the program is dependent upon the individual's academic record and upon the number of spaces available in the program. The license to practice nursing and a grade-point average of 2.5, or better, on all college work attempted are required. Registered nurses whose grade-point average falls below 2.5 may petition in writing to the Committee on Admissions for special consideration. A license to practice nursing as an R.N. in West Virginia is required for enrollment in all clinical nursing courses.

Requests for application forms for the Morgantown campus or extension sites should be addressed to the Assistant Director of Admissions and Records, WVU Health Sciences Center, Morgantown, WV 26506.

Application forms for the Charleston Division or Beckley extension site may be obtained from the Student Affairs Coordinator, Charleston Division, WVU Health Sciences Center, 3110 MacCorkle Ave., S.E., Charleston, WV 25304. Applications for the Parkersburg extension site are available from the WVU Extension Office located at Parkersburg Community College.

Further information about the program may be obtained from Chairperson, Sophomore Academic Unit, School of Nursing, WVU Health Sciences Center, Morgantown, WV 26506; or Chairperson, Charleston Academic Unit, School of Nursing, WVU Health Sciences Building, 3110 MacCorkle Ave., S.E., Charleston, WV 25304. Complete program details are available in the WVU Health Sciences Center Catalog.

Faculty

Shauna Aurelio, R.N., M.S.N. (WVU). Visiting Instructor.
Barbara Banonis, R.N., M.S.N. (WVU). Lecturer.
Gloria Barrett, R.N., M.S. (Tex, Wom. U.). Instructor.
Andrea Bauer, R.N., B.S.N. (WVU). Visiting Instructor.
Marjorie Bower, R.N., M.S.N. (WVU). Instructor.
Lucinda M. Brown, R.N., C.N.M., M.S.N. (U. Ky.), Adjunct Instructor.
Mary Louise Brown, R.N., Ph.D. (U. Pitt.), Visiting Assistant Professor; Coordinator, GSC/WVU Joint Program.
Margaret Burkhardt, R.N., Ph.D. (U. Miami). Assistant Professor.
Mary Jo Butler, R.N., Ed.D. (WVU). Chair, Charleston Unit; Associate Professor.
Caroline Charonko, R.N., M.S.N. (WVU). Visiting Assistant Professor.
Ann Cleveland, R.N., M.S.N. (U. Va.). Lecturer.

Susan Collins, R.N., M.S.N. (Duke U.). Adjunct Instructor.
Mona Counts, R.N.,Ph.D. (U. Texas). Professor.
Theresa Cowan, R.N., M.S.N. (WVU), Visiting Instructor.
Malene Davis, R.N., M.B.A. (WVU). Lecturer.
Daniel DeFeo, R.N., M.A. (U. Iowa), Visiting Instructor.
Pamela Deiriggi, R.N.,Ph.D. (U. Texas). Assistant Professor.
Patricia Diehl, R.N.,M.A. (WVU). Associate Professor.
Maura Dollymore, M.D. (U. Md.). Adjunct Instructor.
Imogene Foster, R.N., M.S.N. (WVU). Assistant Professor.
Pamela Grace, R.N., M.S.N. (WVU), Visiting Instructor.
Suzanne Gross, R.N.,M.N. Ed.(U. Pitt.). Chair, Junior unit; Assistant Professor.
Debra Harr, R.N., Ed.D. (WVU). Associate Professor.
Patricia Hiser, R.N.,M.S. (Russel Sage Col.). Visiting Instructor.
Jean Hoff, R.N.,M.P.H. (U.Pitt.). Visiting Associate Professor.
Elizabeth Hupp, R.N., M.A. (WVU). Adjunct Instructor.
Lorita Jenab, R.N.,Ed.D. (Col. U.). Dean; Professor.
Dorothy Johnson, R.N.,Ed.D. (WVU). Assistant Professor.
Judith Kandzari, R.N.,M.S.N. (WVU). Associate Professor.
Nancy Koontz, R.N., M.S.N. (U.Md.). Associate Professor.
Barbara Koster, R.N., M.S.N. (WVU), Adjunct Instructor.
Barbara Kupchak, R.N.,Ph.D. (U. Texas). Visiting Assistant Professor.
Suzanne Kusserow, R.N., M.S.N. (Yale U.), Assistant Professor.
Bonnie Legg, R.N., M.S.N. (U. Md.), Adjunct Instructor.
Susan Leight, R.N.,M.S.N. (WVU). Instructor.
Nan Leslie, R.N., Ph.D. (U. Pitt.), Assistant Professor.
Deborah Lewis, R.N., M.S.N. (WVU). Adjunct Instructor.
Donna Lyman, R.N., M.S. (U. Alaska). Lecturer.
Sandra Marra, R.N., M.S.N. (WVU). Instructor.
Kathleen Marsland, R.N.,M.S. (U. Colo.). Assistant Professor.
Gaynelle McKinney, R.N.,M.S.N.Ed. (Ind. U.). Professor *Emerita*.
Elise Michael, R.N., Ph.D. (Case Western Reserve), Adjunct Associate Professor.
Karen Miles, R.N.,Ed.D.(WVU). Associate Professor.
Marsha Mitchell, R.N.,Ed. D. (WVU). Assistant Professor.
Alvita Nathaniel, R.N.,M.S.N. (WVU). Lecturer.
Cynthia Neely, R.N., M.S.N. (WVU), Adjunct Assistant Professor.
Mary Nemeth-Pyles, R.N.,M.S.N. (WVU). Instructor.
Susan Newfield, R.N., C.S., M.S.N. (U. Tex.), Assistant Professor.
Barbara Nunley,R.N., M.S.N. (Ohio St. U.). Visiting Instructor.
Lois O'Kelley, R.N., M.S.N. (Wayne St.U.), Associate Professor *Emerita*.
Lynne Ostrow, R.N.,Ed.D. (WVU). Associate Professor.
Christine Palank, R.N., M.S.N. (U. Md.). Adjunct Instructor.
Marjorie Phillips, R.N.,M.N.Ed. (U. Pitt). Assistant Professor.
Jacqueline Riley, R.N.,M.N. (U. Fla.). Assistant Dean; Associate Professor.
Susan Ritchie, R.N., M.P.H. (U. N.C.). Adjunct Instructor.
Jane Shrewsbury, R.N.,M.S.N. Ed. (U. Pitt.). Associate Professor.
Patricia Simoni, R.N.,Ed.D. (WVU). Associate Professor.
Lisa Sinacore, R.N.,M.S.N. (St Louis U.). Instructor.
Marilyn Smith, R.N.,M.S. (U. Mich.). Instructor.
Mary Jane Smith, R.N.,Ph.D. (NYU). Professor.
Frances Snodgrass, R.N.,J.D. (Col. Law Sch., Ohio). Lecturer.
Loreto Sobong, Ph.D. (NYU), Research Associate.
Jacqueline Stemple, R.N.,Ed.D. (WVU). Chair, Sophomore Unit; Associate Professor.
Fredona Stenger, R.N.,M.S.N. (Boston U.). Associate Professor.
Martha Summers, R.N., B.S.N. (Alderson-Broaddus C.), Lecturer.
Sally M. Taylor, R.N., M.A. (WVU), Adjunct Assistant Professor.
Pamela Thompson, R.N.,M.S.N. (Med. Col., Ga.). Visiting Instructor.
Sally Tom, R.N., C.N.M., M.P.A. (Harvard). Visiting Assistant Professor.
Janet Wang, R.N.,Ph.D. (U. Pitt.). Associate Professor.
Alison Witte, R.N.,M.S. (U. Md.). Lecturer.

School of Pharmacy

Sidney A. Rosenbluth, Dean
Carl J. Malanga, Associate Dean
Calvin C. Brister, Assistant Dean, Student Affairs
David Lalka, Assistant Dean, Graduate Affairs

Degree Offered
Bachelor of Science

Nature of Program

Pharmacy was first offered at West Virginia University as a department in the School of Medicine, beginning in 1914. It was changed to the College of Pharmacy in 1936 and to the School of Pharmacy in 1958. In 1960, the School of Pharmacy changed from a four-year to a five-year program, including two years of pre-pharmacy. The current pharmacy curriculum consists of three years of professional study preceded by a minimum of two years of study in an accredited college of arts and sciences.

The objective of the School of Pharmacy is to educate practitioners for current and future roles in the profession of pharmacy and to educate pharmaceutical scientists for careers in teaching and research.

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education. The Council is composed of members from American Pharmaceutical Association, National Association of Boards of Pharmacy, American Association of Colleges of Pharmacy, and American Council on Education. The School of Pharmacy holds membership in the American Association of Colleges of Pharmacy whose objective is to promote the interests of pharmaceutical education. All institutional members must maintain certain requirements for entrance and graduation.

Admission

All students seeking enrollment in the School of Pharmacy must comply with regulations appearing in the *WVU Undergraduate Catalog* and the *WVU Health Sciences Center Catalog.*

Students preparing for the study of pharmacy may satisfy the course work requirements for entrance into the School of Pharmacy by majoring in any arts and sciences subject and including in their course selection the following, or their equivalents:

Pre-Pharmacy Requirements	Semester Hours Credit	WVU Courses Meeting Requirements
English composition	6	Engl. 1 & 2
College algebra*	3	Math. 3
Trigonometry*	3	Math. 4
Principles of economics	6	Econ. 54 & 55
General biology	8	Biol. 1/3 & 2/4
General chemistry	8	Chem. 15 & 16
Organic chemistry	8	Chem. 133/135 & 134/136
Physics	8	Phys. 1 & 2
Electives**	18	

*Pre-calculus (four hours) or calculus (four hours) may be substituted for college algebra plus trigonometry.

**Electives must satisfy the University Liberal Studies Program requirements. Cluster A—12 hr.; Cluster B—6 hr. in addition to Economics 54 and 55.

Admissions are competitive and are based on the cumulative and science academic grade-point averages achieved in all prior college courses, recommendations describing academic performance, results of the Pharmacy College Admissions Test (PCAT), and a personal interview which may be required. A required course in which a grade of D was received must be repeated with a grade of C or better before acceptance can be granted by the School of Pharmacy Committee on Admissions. While outstanding, nonresident applicants are considered, priority in admission is given to qualified West Virginians.

Applicants should write to the Office of Admissions and Records, WVU Health Sciences Center, Morgantown, WV 26506, for official application forms, which are available after January 1 of each year and which should be returned to that office by April 1 preceding the fall term (first semester) in which the student seeks enrollment. Formal applications received after April 1 are considered only when vacancies exist. A $10.00 application fee must accompany the application.

Each applicant who is recommended for acceptance must deposit $75.00 before acceptance is official. If the applicant enrolls, this sum is applied to the first-semester tuition. If the applicant fails to enroll, this deposit is forfeited. Before enrollment in the School of Pharmacy, all students must complete all immunizations and diagnostic procedures required by the West Virginia Board of Trustees, West Virginia University, the West Virginia University Health Sciences Center, and/or the School of Pharmacy.

Completion of the Pharmacy College Admission Test is a requirement for admission. It is strongly recommended that the student take the test in the fall before making application for admission. Information concerning time and place of the test can be obtained from a pre-pharmacy advisor, the School of Pharmacy, or by writing: Pharmacy College Admission Test, The Psychological Corporation, 555 Academic Court, San Antonio, TX 78204.

The Committee on Admissions may require a personal interview with applicants as it deems it appropriate. Interviews are held at the WVU Health Sciences Center and will be arranged insofar as possible to suit the convenience of the applicant. Interviews are scheduled during February, March, and April. In general, only applicants with a cumulative and science grade-point average of 2.5 or above may be called for an interview. Applicants with a cumulative or science grade-point average below 2.5 are generally not considered for admission.

Three academic recommendations are required, although more may be submitted. At least two of these recommendations must be provided by course instructors in any two of the three pre-pharmacy science areas: biology, chemistry, and physics. The third recommendation may be provided by a course instructor of the student's choice.

Admission to Advanced Standing

Students from other accredited schools of pharmacy may be admitted if space is available and they meet the course requirements of the WVU School of Pharmacy, have a 2.5 grade-point average, and are eligible for readmission for the degree in pharmacy in the school previously attended. D grades in professional courses will not be transferred.

For complete information concerning the curriculum and courses of instruction in the School of Pharmacy, see the *WVU Health Sciences Center Catalog*.

School of Physical Education

J. William Douglas, Ph.D., Dean, Professor.
Dana D. Brooks, Ed.D., Associate Dean, Professor.
William L. Alsop, Ed.D., Chair, Division of Physical Education and Sport Studies; Associate Professor.
Kenard McPherson, Ed.D., Chair, Division of Health Promotion; Professor.

Degree Offered

Bachelor of Science in Physical Education

Nature of Program

The School of Physical Education is organized into two divisions: the Division of Physical Education and Sport Studies and the Division of Health Promotion. Students in physical education and sport studies examine the relationship of play, games, sport, athletics, fitness, and dance to our culture and cultures throughout the world. Their preparation includes the acquisition of knowledge and skills from a vast array of movement activities in addition to an understanding of associated physiological, biomechanical, sociological, psychological, historical, philosophical, and pedogogical principles. Preparation in athletic training is designed to enable students to prevent and treat injuries related to athletic competition. Students in safety develop competencies which enable them to use innovative approaches in the conduct of safety and driver instructional activities. Their preparation is designed to develop foundation skills and knowledge related to accident prevention. Health education students investigate health issues and concerns related to the individual and society, and examine institutions and agencies dedicated to promoting good health.

Graduates in physical education with teaching and coaching certification are generally employed as elementary or secondary physical education teachers and athletic coaches. Graduates in sport studies are employed in professional and collegiate sport enterprises, fitness centers, recreation programs, sporting goods stores, commercial sporting goods manufacturers; others are employed as sport writers, sport broadcasters, or sport counsellors. Graduates in safety studies are employed as driver and traffic safety educators or traffic safety specialists in government business and industry. Graduates in health education may be employed as elementary or secondary classroom health educators, community health educators, wellness center consultants, corporate health educators, health agency educators, or in state or county health departments.

Programs

Baccalaureate degree programs offered in the School of Physical Education include teacher certification in physical education, health education, and traffic safety programs and sport studies with an emphasis in sport management, sport physiology, and sport behavior (psychology/sociology). Certification is available in athletic training, athletic coaching, and dance.

Facilities

Facilities of the School of Physical Education include the gymnasium, dance studio, and swimming pool in E. Moore Hall; a gymnasium in Stansbury Hall; bowling lanes and game rooms in Mountainlair; indoor track, sports area, weight training room, martial arts room, and rifle range in the Shell Building; outdoor areas including the stadium, tennis courts, archery range, soccer and field hockey fields, and outdoor track; and the Natatorium with its pool and diving well.

The Coliseum contains the Ray O. Duncan Memorial Library, classrooms and seminar rooms, a large gymnasium, a dance studio, racquetball and squash courts, traffic safety laboratory, human factors research laboratories, and faculty offices.

Additional faculty and staff offices are in E. Moore Hall, Stansbury Hall, the Natatorium, and the Shell Building.

Admission Requirements

The School of Physical Education uses the admission requirements of WVU. In addition, you must have a high school average of 2.0. High school graduates are required to present credit for four units of English, one unit of biology, three units of social studies, two units of college preparatory mathematics, one of which must be algebra, and eight units of electives.

Credit Load Per Semester

The minimum work per semester is 12 hours and the maximum work per semester is 20 hours. However, an adviser may register a student as a part-time student if fewer than 12 hours are required to meet all requirements for the bachelor's degree. Other exceptions to these regulations may be requested by petitioning the Committee on Academic Standards.

Requirements for Degrees

• University LSP: Students in teacher certification programs must complete general studies requirements as listed in the College of Human Resources and Education (Programs for Secondary School Teachers); other students complete the University LSP.

• Teacher Certification Curriculum: Students in teacher certification programs must complete a group of educationally related courses and other prescribed work.

• Major Requirements: Students must complete the requirements as determined by the appropriate department.

• Total Hours: Students must complete a minimum of 128 hours.

• Grade-Point Average: A minimum grade-point average of 2.0 is required for graduation. Those in teacher certification must have a minimum grade-point average of 2.5.

Division of Physical Education and Sport Studies

William L. Alsop, Ed.D., Division Chair, Associate Professor

Degree: Bachelor of Science in Physical Education

The division offers opportunities for you to pursue certification in teaching, coaching, and dance and a noncertification program track in physical education. Teacher Certification Program in Physical Education The required courses in physical education for teacher certification are:

1. ***Theory and Foundations***—P.P.E. 67, 75, 121, 126 133, 176, 177, 198, and S.E.S. 71 or 72, 164, 165.
2. ***Psychomotor***

a. Team and Individual Sports—Students must complete four of the following:
   P.P.E. 45 *Football, Baseball, Softball*
   P.P.E. 46 *Volleyball, Soccer, Speedball*
   P.P.E. 47 *Basketball, Field Hockey, Team Handball*
   P.P.E. 48 *Tennis, Badminton, Golf*
   P.P.E. 49 *Archery, Bowling, Fencing*
   P.P.E. 50 *Wrestling, Weight Training, Track and Field*

b. Aquatics—Students must complete one of the following:
   P.P.E. 57 *Aquatics*
   P.P.E. 124 *Water Safety Instructorship*

c. Dance—Students must complete one of the following:
   Dance 35 *Theory and Practice of Modern Dance Techniques*
   Dance 37 *Advanced Dance Techniques with Principles of Choreography*

Dance 38 *Dance Composition*
Dance 39 *Folk and Ballroom Dance*

d. Gymnastics—Students must complete one of the following:
P.P.E. 65 *Gymnastics*
P.P.E. 66 *Advanced Gymnastics*

e. Rhythms and Low Organization Games
P.P.E. 109 *Early Childhood Activities*
P.P.E. 110 *Middle Childhood Activities*

3. Second Teaching Field and Professional Education—See requirements as listed by the College of Human Resources and Education.

Recommendation for Teacher Certification

The prospective teacher who intends to apply for teacher certification in West Virginia must satisfy the requirements in physical education and professional education. Teacher certification in physical education is provided for grades K-12. Second teaching fields may be chosen from the various teaching specialization programs for elementary and secondary school teachers listed in the College of Human Resources and Education, program area in Curriculum and Instruction.

Certification in Athletic Coaching

The required courses for a WVU athletic coaching certificate are P.P.E. 121, 156, and 157 and S.E.S. 71 or 72, 164, and 165. This certification program is <not >part of the subject-matter specializations approved by the West Virginia Board of Education.

Certification in Dance

The required courses for a WVU dance certification are Dance 35, 37, 38, 70, 82, and 87 and four hours of approved electives, excluding Dance 198. This program is <not >part of the subject-matter specializations approved by the West Virginia Board of Education.

Interdisciplinary Degree in Dance and Liberal Studies

In conjunction with the College of Arts and Sciences, the dance department offers a dual major requiring 42 hours in dance and 30 or more hours as a major in one of the liberal arts. Students should contact one of the dance instructors for advising purposes. (See information about interdepartmental majors in the College of Arts and Sciences section of the catalog.)

Sport Studies

The sport studies program offers opportunities for students to pursue program majors in sport behavior and sport management. The programs in sport studies are not teacher certification programs.

The required courses for the sport and exercise studies programs are:

- Completion of University LSP.
- Theory and Foundation: S.E.S. 67, 71, 72, 164, 165, 197, 198. P.P.E. 121, 156.
- Second Field—Select a second field from one of the following areas. Course requirements for each area are listed.

a. Sport Behavior (Psychology and Sociology and Anthropology)— P.P.E. 75, 157, Psych. 1, 2, 141, 151, six hours electives—200 level courses. Sociology/Anthropology 1, 5, 102, 122, six hours electives— 100-level courses.

b. Sport Management—Acctg. 51 and 52, Econ. 54 and 55, Comm. 109, C.S. 5, Journ. 1, PR 111, Bus. Adm. 120, 130, and six hours of advisor approved electives. **Note:** All students enrolled in the sport studies program must earn a grade of "C" or better in theory and foundation and in second field courses.)

General Physical Education Programs

General physical education classes are open to all students of the University. A wide variety of sport, aquatic, dance, gymnastic, fitness, martial arts, outdoor adventure and lifetime sport activities are offered. The aims of the general physical education program are to develop:

* An appreciation of the body and its capacity to move;
* Movement skills of games, sport, dance, and aquatics;
* An appreciation of the value of continued activity throughout all age periods in an individual's life;
* An understanding of the cultural significance of sport and dance; and
* Concepts of the physiological characteristics of sport and movement.

Courses numbered G.P.E. 1-42 or Dance 4-20 are elected by students. Elementary education majors must enroll in G.P.E. 41 and 42. All courses are at a beginning level unless otherwise specified. Repeating an activity is not allowed except at a more advanced level.

Division of Health Promotion

Kenard McPherson, Ed.D., Division Chair, Professor

Degree: Bachelor of Science in Physical Education
Teacher Certification in Health Education

The required courses for teacher certification in health education are:

1. Health Education—Hl. Ed. 50, 70, 71, 101, 102, 103, 220;
2. Nutrition—HN&F 71;
3. Safety Studies—Saf. S. 70;
4. Physiology—S.E.S. 165 or Biol. 106;
5. Psychology—Psych. 141.

In addition, the student will complete professional education requirements as listed by the College of Human Resources and Education.

Certification in Athletic Training

The required courses for certification in athletic training are:

1. Physical Education— PPE. 121, 176, 219, 220, 221, 222, 223, and 324 and S.E.S. 164, 165.
2. Safety Studies—Saf. S. 70.
3. Biology—Biol. 166 or Physiology 141 and 241.

In addition, the student will complete a first teaching field and professional education requirements; see requirements as listed by the College of Human Resources and Education.

Teacher Certification in Safety Education

The required courses for teacher certification in Safety Education are: Saf. S. 70, 131, 151, 232, 254, 256. In addition, you will complete a first teaching field and professional education requirements. (See requirements as listed by the College of Human Resources and Education.)

Recommendation for Teacher Certification

The prospective teacher who intends to apply for teacher certification in West Virginia must satisfy the requirements:

(1) in athletic training, first teaching field, and professional education;
(2) in safety education, first teaching field, and professional education; and
(3) in health education, major field of study, and professional education.

Exercise Physiology

1. Divisional Requirements

Students must complete the following courses in theory and foundation.

S.E.S. 67 *Introduction to SES*
Saf. S. 70 *First Aid and Emergency Care*
S.E.S. 71 *Sociology of Sport*
S.E.S. 72 *Psychology of Sport*
P.P.E. 75 *Motor Learning*
P.P.E. 121 *Sport Injury Control*
S.E.S. 164 *Kinesiology*
S.E.S. 165 *Physiology of Motor Activities*
S.E.S. 197 *Internship*
P.P.E. 210 *Anatomy*
SES 198 *Special Topics (Conditioning Technique & Methods)*
SES 198 *Special Topics (Sport Law)*

2. Second Field Requirements

Students must complete the following courses.

Math 3 *College Algebra*
Math 4 *Plane Trigonometry*
Physics 1 *Introductory Physics*
Physics 2 *Introductory Physics*
Physio. 141 *Elementary Physiology*
Chem. 15 *Fundamentals of Chemistry*
Chem. 16 *Fundamentals of Chemistry*
Bio. 1 & 3 *General Biology*
Bio. 2 & 4 *General Biology*
Bus. A 120 *Survey of Management*
Bus. A 130 *Survey of Marketing*
HN & F 71 *Nutrition*

Students must obtain a grade of "C" or better in all required divisional and second field courses. The degree program in Exercise Physiology is not a teacher certification program. A minimum of 128 hours is required for graduation.

Faculty

Division of Physical Education and Sport Studies

Daniel Adams, Ed.D. (WVU), Adjunct Lecturer, Physical Education Teacher Education.
William L. Alsop, Ed.D. (WVU), Division Chair/Associate Professor, Sport Management.
Van F. Anderson, Ed.D. (WVU), Lecturer, Sport Management.
Carl P. Bahneman, Ph.D. (U. Pitt), Professor, Physical Education Teacher Education.
Marcia L. Bowers, B.A. (Point Park Col.), Lecturer, Dance.
Dallas D. Branch, Jr., Ph.D. (Ohio U.), Assistant Professor, Sport Management.
Dana D. Brooks, Ed.D. (WVU), Associate Dean/Professor, Sport Behavior.
Linda K. Burdette, M.S. (WVU), Assistant Professor, Physical Education Teacher Education.
Nate Carr, B.A. (Iowa St. U.), Lecturer, Physical Education Teacher Education.
Linda M. Carson, Ed.D. (WVU), Assistant Professor, Physical Education Teacher Education.
W. Gale Catlett, B.S. (WVU), Lecturer, Physical Education Teacher Education.
J. William Douglas, Ph.D. (Ohio St. U.), Dean/Professor, Physical Education Teacher Education.
Edward F. Etzel, Jr., Ed.D. (WVU), Assistant Professor, Sport Behavior.
William A. Fiske, M.S. (Biscayne C.), Lecturer, Physical Education Teacher Education.
Andrew H. Hawkins, Ph.D. (Ohio St. U.), Professor, Physical Education Teacher Education.
Dennis Floyd Jones, Ph.D. (U. Pitt), Assistant Professor, Sport Management.

John C. McGrath, M.S. (Bemidji St. C.), Assistant Professor, Physical Education Teacher Education.
Gary D. McPherson, M.Ed. (WVU), Lecturer, Physical Education Teacher Education.
Pamela J. Morton, Ed.D. (Ohio St. U.), Assistant Professor, Physical Education Teacher Education.
Don Nehlen, M.S. (Kent St. U.), Lecturer, Physical Education Teacher Education.
Lori J. Nelson, B.A. (Point Park Col.), Lecturer, Dance.
Daniel A. Oliver, J.D. (WVU), Lecturer, Sport Management.
Andrew C. Ostrow, Ph.D. (U. Calif.), Professor, Sport Behavior.
I. Dale Ramsburg, Ed.D. (WVU), Assistant Professor, Sport Behavior.
Fred A. Schaus, M.S. (WVU), Adjunct Associate Professor, Physical Education Teacher Education.
David H. Taylor, M.S. (WVU), Instructor, Physical Education Teacher Education.
Mary Kathryne Wiedebusch, M.A. (WVU), Associate Professor, Dance.
Robert L. Wiegand, Ed.D. (U. Ga.), Professor, Physical Education Teacher Education.
Bruce W. Wilmoth, M.S. (B. Young U.), Associate Professor, Physical Education Teacher Education.
Daniel H. Ziatz, Ph.D. (U. Utah), Associate Professor, Physical Education Teacher Education.

Division of Health Promotion
Robert H. Anderson, M.S. (NYU), Lecturer, Health.
Danny Bonner, M.S. (WVU), Lecturer, Exercise Physiology.
John M. Cavendish, Ed.D. (WVU), Assistant Professor, Health.
Nicolene Cavendish, Ed.D. (WVU), Adjunct Assistant Professor, Health.
Gary W. Danielson, M.S. (Northwest Missouri St. U.), Lecturer, Athletic Training.
Daniel E. Della-Giustina, Ph.D. (Mich. St. U.), Professor, Safety.
Karen K. Douglas, Ph.D. (Tex. Wom. U.), Assistant Professor, Health.
Kevin H. Gilson, Ed.D. (WVU), Associate Professor, Exercise Physiology.
Cheryl Denise Holloway, M.S. (WVU), Adjunct Assistant Professor, Health.
William Guyton Hornsby, Jr., Ph.D. (Louisiana St. U.), Assistant Professor, Exercise Physiology.
Peggy Kovac, M.S. (WVU), Adjunct Assistant Professor, Health.
Robert L. Kurucz, Ph.D. (Ohio St. U.), Professor, Exercise Physiology.
John Leard, M.Ed. (Northeastern U.), Assistant Professor, Athletic Training.
Kenard McPherson, Ed.D. (Mich. St. U.), Division Chair/Professor, Health.
Randall Meador, M.S. (WVU), Lecturer, Athletic Training.
Mary Oliver, M.S. (WVU), Lecturer, Health.
Elizabeth A. Pedone, M.S. (U. of Virginia), Lecturer, Athletic Training.
Leanne Ransdell, M.S. (W. Ky. U.), Adjunct Assistant Professor, Health.
Pete Shaffron, Jr., Ed.D. (WVU), Associate Professor, Health.
Andrew J. Sorine, Ed.D. (WVU), Associate Professor, Safety.
John C. Spiker, M.Ed. (U. Pitt), Adjunct Associate Professor, Athletic Training.
Gary L. Winn, Ph.D. (Ohio St. U.), Assistant Professor, Safety.
Rachel A. Yeater, Ph.D. (WVU), Professor, Exercise Physiology.

***Emeriti* Faculty**
William A. Bonsall, M.S. (WVU), Associate Professor.
Wincie Ann Carruth, Ph.D. (NYU), Professor.
E. Eugene Corum, M.S. (WVU), Associate Professor.
Beatrice Hurst, M.A. (Columbia U.), Associate Professor.
C. Everett Marcum, H.S.D. (Ind. U.), Professor.
Mary Jane Pearse, M.S. (WVU), Associate Professor.
John Semon, M.S. (WVU), Associate Professor .
Charity W. White, M.S. (WVU), Associate Professor.

School of Social Work

Michael A. Patchner, Ph. D. (U.of Pitt.). Dean, Professor, Gerontology and Health Care of the Elderly.
Barry L. Locke, Ed.D. (WVU). Assistant Dean, Assistant Professor. Rural social work.
Patty A. Gibbs, Ed.D. (WVU). BSW Program Director, Associate Professor. Women's issues, Death and dying.
James D. Ward, M.S.W. (WVU). Field Instruction Coordinator.

Degree Offered
Bachelor In Social Work

Nature of Program

The School of Social Work began in the early 1930s. In 1971, the Department of Social Work became an independent school. Our undergraduate program is fully accredited by the Council on Social Work Education, which makes our graduates eligible for licensure as social workers in West Virginia and other states, depending on individual state laws. The degree program offered by the School of Social Work allows students the opportunity to prepare for entry-level professional practice at the baccalaureate level and to specialize at the advanced (graduate) level of study. The baccalaureate program prepares social workers for generalist practice and has been a recognized national leader in the development of baccalaureate-level curriculum to support this educational goal. The graduate program offers students opportunities to specialize in the areas of aging, community health and mental health, or families. Both programs emphasize social work practice in rural areas and small towns.

The School of Social Work provides a comprehensive program of professional education in social work, including degree programs at the baccalaureate and master's levels, and a range of part-time and continuing education opportunities.

Social work, one of the oldest human service professions, is based upon the social and behavioral sciences used to understand and to help individuals, groups, and communities. Social work is a profession concerned with helping people accomplish life goals and realize their full potential. Four major purposes of social work are:

1. To enhance the problem-solving, coping, and developmental capacities of people.
2. To promote the effective and humane operation of the systems that provide people with resources and services.
3. To link people with systems that provide them with resources, services, and opportunities.
4. To develop and improve social policy.

In carrying out these purposes, social workers seek to solve problems associated with financial need, social and cultural deprivation, racial injustice, gender inequalities, physical and mental health, disadvantaged children, troubled youth, disturbed family relationships, and aging. Therefore, social workers are needed in a variety of service agencies, both private and public: schools, hospitals, correctional institutions, residential treatment settings, adoption agencies, industry, community service organizations, prisons, the courts, veteran's bureaus, nursing homes, children's services, and public welfare agencies. Since the social work arena is so wide, you will find it easy to discover a career path in social work that meets your interests and career goals.

Job opportunities for B.S.W. and M.S.W. graduates are expected to continue increasing in the coming years. Given the positive national reputation of our B.S.W. and M.S.W. programs, our graduates often find themselves actively sought by employers.

The B. S. W. also provides a sound educational base for those who wish to pursue additional education. In the past, graduates have obtained advanced degrees in social work, law, counseling, rehabilitation, public administration, and education.

Undergraduate Program Objectives

The objectives of the B.S.W. program are derived from the philosophy and goals of the School of Social Work and the missions of the University, the objectives of the social work profession, and the needs of people in our society. A primary objective is to offer the opportunity to prepare students for the beginning level of professional social work practice.

As part of the overall educational experience, you will obtain a well rounded, liberal arts education. This education will assist in gaining personal knowledge and growth, in developing skills necessary to think and to work from an objective frame of reference, and in obtaining an awareness of human needs in today's technologically advanced society.

In accomplishing these objectives, you will be better prepared to take on the responsibilities necessary to be effective both as a person and a helping professional. More specifically, the purpose of the baccalaureate social work program is described in four interrelated objectives:

1. To prepare the undergraduate student for entry-level professional practice, with special attention to rural and small town settings.
2. To prepare students for effective, responsive, and creative social work practice, including skills for leadership to further develop the social work profession and to humanize social welfare problems.
3. To enrich the liberal arts curriculum of WVU by providing opportunities for the undergraduate student body to increase their sensitivity, knowledge, and understanding of human needs, social problems, social welfare issues, and approaches toward resolution of problems.
4. To contribute to the preparation of the student who may be appropriately interested in future graduate-level education in social work within our School of Social Work, in other graduate social work programs, or in other graduate programs of study.

Social work majors who exhibit conduct that violates the National Association of Social Workers (NASW) Code of Ethics may be counseled out of the program, in accordance with established University policy as set forth in the *BSW Student Handbook*, if they are unable to demonstrate that the conduct in question has been modified to the point of being in compliance with NASWs Code of Ethics. Students shall be provided appropriate safeguards for appealing such recommendations and given an opportunity to demonstrate that the conduct has been modified to comply with the NASW's Code of Ethics.

Admissions

All freshman and sophomore students pursuing a degree in social work are pre-social work majors. For entry into our pre-major as a freshman, you should submit your initial application to the Office of Admissions and Records, following the same procedure as required of all other freshman students.

All of our pre-majors are assigned advisers who are faculty with the School of Social Work. Advisers will help you to plan an academic program and to register for your course work. They will also provide information about careers in social work. Pre-majors at WVU or its branch campuses are not automatically transferred from pre-major status (freshman and sophomore years) to the major (junior and senior years). Instead, during your sophomore year, you will apply for admission to the B.S.W. program. The admissions process is competitive and students are selectively admitted to the program for their final two years of work.

You must meet the following minimum criteria to be eligible for admission:

1. Successful completion of 58 credit hours.
2. A grade-point average of 2.0 on a 4.0 scale for all course work completed at the time of entry to the major.
3. **Documented** completion of 100 hours of human service experience (paid or volunteer) related to social work (must be completed since high school graduation).
4. Satisfactory completion of So. Wk. 51 *Introduction to Social Work*, with a grade of B or higher. Students enroll in So. Wk. 51 during their second semester freshman or first semester sophomore year.
5. A written statement presenting your reasons to major in social work. You will be given an outline of the items to include in this personal statement.
6. A letter of reference from your So. Wk. 51 instructor. A form for this purpose is made available to you in So. Wk. 51.
7. An interview, if requested, with the School of Social Work Admissions Committee before admission to the program.
8. Successful completion of the following liberal studies requirements:
   English 1 and 2;
   Cluster A, B, and C;
   Social Work 47 or other, University-approved minority course;
   one mathematics course.

Students may be denied admission to the major for non-academic reasons involving conduct that violates the National Association of Social Workers (NASW) Code of Ethics. Students shall be provided appropriate safeguards for appealing such recommendations and shall be provided with an opportunity to demonstrate that the conduct in question has been modified to the point of being in compliance with the NASW Code of Ethics. Should the student not be able to make the necessary modifications in conduct, he or she shall be counseled out of the program in accordance with established University policy as set forth in the student handbook.

Transfer Students

If you are a transfer student wishing to enter the program, contact the B.S.W. Program Director. You should make this contact no later than the semester before you intend to enter the program. As a transfer student, you will be asked to submit an official transcript of your course work to date. You must meet all requirements that apply to pre-major or major status, whichever applies to you. In order for upper-division social work courses taken in other programs to meet our social work course requirements, these courses must have been taken in a program accredited by the Council on Social Work Education, and you must have earned a B or better in the course. Otherwise, the course(s) will count as electives. You will be expected to complete So. Wk. 51, our introductory course, prior to admission into our major unless you have taken course work in another social work program that is equivalent to So. Wk. 51. The B.S.W. Program Director will advise you if your previous course work meets this requirement. You must also be able to document completion of 100 hours of volunteer activity related to social work, which may include paid employment such as camp counselor, etc.

Requirements for the Degree

The undergraduate social work program consists of a minimum of 32 upper-division hours in social work and six lower division hours, a minimum of 12 upper-division hours in required social and behavioral sciences courses, and an additional requirement of 12 upper-division social science hours with at least three hours from designated courses in each of the fields of sociology, psychology, and political science. All social work students are required to take three additional hours of course

work dealing with racial or other minority groups selected from a list of courses designated by the undergraduate social work program. A total of 128 hours are required for the degree. Of these, 58 credit hours must be in upper-division course work.

You are encouraged to consult with your adviser regarding the selection of electives appropriate for your career interest.

To establish a social work major and to qualify for graduation, you must have spent at least two semesters and have accumulated a minimum of 30 hours as an upper-division student in our social work program, or under its guidelines. Also, you must fulfill the following: complete all required social work courses—in their proper sequence—with grades of C or better, with the exception of So. Wk. 51, which must be completed with a B or better; maintain an overall grade-point average of 2.0 or above, and maintain a grade-point average of 2.0 or better in all upper-division social science courses specifically required of the social work major. Students who are unable to meet the performance standards for social work courses as outlined are permitted to repeat the course unsuccessfully attempted initially. If the student is unsuccessful in the second attempt, he or she must leave the program. If a student is unsuccessful in either So. Wk. 290 or 291, both courses must be repeated and successfully completed to meet graduation requirements.

The specific curriculum requirements for graduation are:

University Liberal Studies Program	**Hr.**
Cluster A	12
Cluster B	12
Cluster C	11-12
plus	
English I and II	6
Mathematics	3
Social Work 47 (Minority content)	3
Subtotal	47-48

In the LSP, you must also take a writing skills course in social work, which is designated by a "W" in the *Schedule of Courses*. As a social work student, you are required to take the following Cluster B courses: Psychology 1, Political Science 1 or 2, and Sociology/Anthropology 1 and 7. In Cluster C, you must take a lab science class for four credit hours.

Additional minority requirement of student's choice	**3**

Social and Behavioral Science Required Courses	
Psych. 141 *Introduction to Human Development*	3
Soc. & A. 121 *The Family*	3
Soc. & A. 211 *Social Research Methods*	3
Pol. S. 120 *State and Local Government*	3
Subtotal	12

Additional Social and Behavioral Science Requirements (nine hours total with at least three hours from psychology, sociology and anthropology, and political science.)	**9**

Required Social Work Courses:

Lower Division	
So. Wk. 51 *Introduction to Social Work*	3
Upper Division	
So. Wk. 191 *Human Biology for Social Workers*	3
So. Wk. 200 *Social Welfare Policy and Services*	3
So. Wk. 210 *Social Welfare Policy and Services in Appalachia*	3
So. Wk. 219 *Skills Lab 1*	1
So. Wk. 220 *Social Work Methods 1*	3
So. Wk. 222 *Social Work Methods 2*	3
So. Wk. 223 *Skills Lab 2*	1
So. Wk. 250 *Social Functioning and Social Work*	3
So. Wk. 290 *Social Work Practice Seminar*	3
So. Wk. 291 *Field Practicum*	12
Subtotal	35
Electives	18-19
Grand Total	**128**

Typical Study Load

A normal study load for a social work major is 15 to 18 hours. If you have a grade-point average below 2.0, you will not be permitted to exceed the normal load. Students with grade-point averages under 3.0 are only rarely permitted to carry more than 18 credit hours. If your grade-point average is 3.0 or above and you want to carry 19 to 21 hours, you must petition the Dean of the School of Social Work through your adviser. Students are not permitted to carry more than 21 credit hours in asemester.

Field Instruction Requirements

Field instruction, which occurs during your senior year, is a key component of your total educational experience in the undergraduate social work program. During the field practicum (So. Wk. 291) you will have the opportunity to "test out," through actual social work service-providing activities, your ability to utilize and apply the knowledge, values, and skills you have acquired while at WVU or as a result of other life experiences.

To enter the field practicum, you must meet the following criteria:

- Senior rank (at least 89 hours completed).
- A 2.0 overall grade-point average.
- Completion of So. Wk. 47, 191, 200, 210, 219, 220, 222, 223, and 250 with grades of C or better and completion of Sociology 211.

Field placement activities are usually carried out for one semester as a modified block system, but part-time students may be interested in a two semester placement called a concurrent system. The block system requires students to spend four full work days in placement over the course of one semester (63 days). The concurrent system requires students to spend two full work days in placement over the course of two semesters. A minimum of 440 clock hours of field placement work must be completed during the field practicum. While in field placement, students participate in So. Wk. 290 *Social Work Practice Seminar*, which provides educational support for the practicum.

After consultation with your adviser, and with the approval of the B.S.W. program director and field instruction coordinator, you will be assigned to an approved field placement setting. Field placement assignments are in social welfare organizations and agencies in Monongalia or surrounding counties. These organizations have met the criteria for participation in our field instruction program.

To successfully complete requirements for graduation, students must demonstrate, through educationally-focused field experience activities, those competencies (i.e., combination of social work knowledge, values, and skills) which have been identified as suitable and necessary for entry into professional social work practice.

Non-majors in Social Work Courses

Effective August 1988, if you are a candidate for a Board of Regents Bachelor of Arts Degree (BORBA) with an interest in a career in social work, you will be permitted to take any of the undergraduate social work courses on a space available basis or with instructor's consent. BORBA candidates must meet the same requirements for sequencing of social work courses and performance standards in social work courses as social work majors. Other non-majors are also permitted to take selected social work courses, which do not include our methods, skill lab, and practice course.

Faculty

Professors

Marjorie H. Buckholz, Ph.D. (NYU). *Emerita.*
Nancy L. Lohmann, Ph.D. (Brandeis U.). Social gerontology, Research measurement.
Roger A. Lohmann, Ph.D. (Brandeis U.). Nonprofit management, Social gerontology, Rural social services.
Robert A. Porter, Ph.D. (Brandeis U.). *Emeritus.*
Victor L. Schneider, Ph.D. (U. Mich.). *Emeritus.*
LeRoy G. Schultz, M.S.W. (Wash. U.). Victimology, Forensic social work.

Associate Professors

John F. Isaacson, M.S.W. (U. Penn). Family life theory, Homosexuality.
William Little, Ph.D. (U of Washington). Ethnicity, Community development, Urban politics.
Caroline T. Mudd, M.S.W. (U. Penn). *Emerita.*

Assistant Professors

Eleanor Blakely, Ph.D. (U of North Carolina at Chapel Hill).Social welfare policy/ administration.
Marcia Egan, MSW (Western Michigan U).Substance abuse, Health care.
Goldi Kadushin, Ph.D. (U of Illinois at Chicago). Medical/health care.

Adjunct Instructors

Ronald W. Bailey, M.S.W. (WVU). Adjunct. Field instruction.
John P. Claude, M.S.W. (WVU). Adjunct. Field instruction.
Susan M. Cyphers, M.S.W. (WVU). Adjunct. Field instruction.
Lawrence Harton, M.S.W. (WVU). Adjunct. Field instruction.
Elizabeth Kent, M.S.W. (WVU). Adjunct. Field instruction.
John R. Klenowski, Ed.D. (WVU). Adjunct. Field instruction.
Arlen D. Miller, M.S.W. (Ohio St. U.). Adjunct. Field instruction.
Robert D. Musick, M.S.W. (WVU). Adjunct. Field instruction.

Part 6 Special Programs

African and African American Studies Center for Black Culture

William A. Little, Ph.D. (U.Wash.). Director and Associate Professor of Social Work

The objective of the Center for Black Culture is to enhance the University's knowledge of the rich heritage of people of African descent by providing a forum for cultural, educational, and social events unique to the African experience. The Center sponsors a certificate program, lectures, workshops, art exhibits, films, alumni activities, career events, tutorial services, and other activities that explore African-American cultural forms and political issues. The Center seeks to expose students from all racial, religious, and ethnic backgrounds to research and academic experiences beyond those found in the traditional college curricula.

African and African-American Studies Certificate Program

The African and African-American Studies Certificate program is an interdepartmentally-supported academic unit within the Center for Black Culture. Approved by the West Virginia University Faculty Senate in the spring of 1990, it is a multidisciplinary program of study that seeks, through an Afrocentric framework, to explore key aspects of the African world experience. The term "Afrocentric" refers to the study of African people from the points of view of the African people and those of African descent themselves. The broad educational purpose of the certificate program is to engender among all students an intellectual appreciation of the contributions that African people have made to world civilization.

Certificate Requirements

Students in the African and African-American Studies program are required to work with a regular advisor to complete an individualized curriculum plan. While reflecting a certain amount of standardization in the acquisition of core or basic elements of African and African-American knowledge, the program also encourages flexibility between the certificate requirements and the student's own major degree requirements.

In order to receive an AAAS certificate, students must complete a total of 18 credit hours, with a minimum GPA of .2.5. Requirements for the certificate include MDS 100 *Introduction to African and African-American Studies* (three credits), at least three credit hours of independent study or research in a concentration area, at least three credit hours of a capstone seminar, and at least nine additional credit hours in a concentration area.

Students may select courses from one of three geographical areas of interest: African studies (the study of African people in Africa), African-American studies (the study of African people in the United States, Canada, the Caribbean, and South America) or Africana studies (a comparative examination of Africa, the Americas, and/or European/Asian African people). Students may also choose from one of several specific academic concentrations. No student may take more than three courses from one prefix or department, and only the courses offered by AAAS faculty members or those approved by the AAAS executive committee will be accepted for the certificate program.

Application forms and further information about the African and African- American Studies curriculum may be obtained from Dana Fittante, administrative assistant, Center for Black Culture, 590 Spruce Street, Morgantown, WV 26506. Telephone (304) 293-7029.

AAAS Faculty Associates
Gloria Barrett, R.N., M.S. (Tex. Wm. U.) Instructor, School of Nursing
Constance Burkes, M.S. (WVU) Training Coordinator, Research Instructor, UACDD
Sandra Dixon, Ph.D. (Brown U.) Assistant Professor, Foreign Languages
Tesfa Gebremedhin, Ph.D. (Okla. St. U.).Associate Professor, Resource Management
Wilbert Jenkins, Ph.D. (Mich.St.U.). Assistant Professor, History
Monica Little, J.D. (U. Wash.). Assistant Professor, Public Administration
William A. Little, Ph.D. (U. Wash.). Associate Professor, Social Work
Charles Martin, Ph.D. (Yale U.). Assistant Professor, English
Robert Maxon, Ph.D. (Syracuse U.). Professor, History
Robert Maxwell, Ph.D. (Cornell U.). Dean, College of Agriculture and Forestry
John Milam, Ph.D. (U. Va.). Assistant Professor, Curriculum and Instruction
Janice Spleth, Ph.D. (Rice U.). Professor, Foreign Languages
Gerald Thomas, Ph.D. (U. Ky.). Assistant Professor, Geography
Ernest Walker, Ph.D. (NC St.U.). Assistant Professor, Electrical Engineering
Daniel Weiner, Ph.D. (Clark U.). Assistant Professor, Geography
Christopher Wilkinson, Ph.D. (Rutgers U.). Associate Professor, Music

Center for Women's Studies

Judith G. Stitzel, Ph.D. (U. Minn.). Director and Professor of English.

The Center for Women's Studies serves West Virginia University students through its courses, its certificate program, and a variety of out-of- classroom opportunities including lectures, conferences, seminars, and films. New career opportunities and the new flexibility in male and female roles are challenging us all to explore new possibilities for our lives, and students are warmly invited to participate in the activities of the Center.

Academic Opportunities in Women's Studies

Women's Studies courses in a variety of areas throughout the University are available to interested students. Many of these courses fulfill distribution requirements and the cultural pluralism (minority studies) requirement for the WVU Liberal Studies Program. An undergraduate certificate in women's studies, earned in conjunction with a student's major, is also available and is valuable for anyone planning graduate work or employment in areas such as teaching, history, literature, medicine, law, nursing, business, social work, personnel management, and family resources. In addition to the women's studies courses listed in this catalog, other courses focusing on women and gender are available in several University departments and are listed with departmental offerings in the course schedule. Updated lists of women's studies courses are also available from the Center for Women's Studies each semester.

Certificate Program

An undergraduate certificate in women's studies allows students to complement their major field with a coherent program of courses which will give them access to new knowledge about women and gender. Students may receive a certificate in women's studies through a combination of required and elective courses totaling 19 credit hours with a minimum grade-point average of 2.75. Women's Studies 40 (three credits) and Women's Studies 240 (four credits) are required of all certificate students. For the remaining 12 credits, students may choose from among approved electives. No more than six hours may be taken in any one department. Up to three of the 12 hours may be taken either as independent study or as a field experience. Students who satisfactorily complete the requirements of the program will receive a certificate in women's studies at the time that they receive the bachelor's degree, and this award will be so noted on their University transcripts.

To receive a detailed schedule of courses and further information about activities, contact the Center for Women's Studies, 200 Clark Hall, 293- 2339.

Gerontology Center

Rick A. Briggs, M.A. (Andrews U.), Interim Director.

Certificate Program

Because the rapid growth of the elderly population is affecting all aspects of U.S. society, education in gerontology—the study of human aging— promises to enhance the professional qualifications and employability of students preparing for a variety of careers, including business management, health sciences, counseling/psychology, human services, therapeutic recreation, and urban and regional planning. Study of gerontology also prepares students to deal effectively with the aging process in their families, their friends, and ultimately themselves. The Gerontology Center offers an 18-credit undergraduate certificate program for students who wish to obtain a foundation of knowledge in aging while pursuing a degree in another field.

Requirements for the Certificate includes MDS 50 *Introduction to Gerontology* (three credits), MDS 250 *Issues in Gerontology* (three credits), and a total of 12 credits in Field Experience and electives selected from an approved pool of aging-related courses offered in a number of disciplines.

The Gerontology Center is committed to increasing understanding of the aging process and supporting improvements in the quality of life for elderly persons, particularly the rural elderly of Appalachia. The Center promotes and coordinates interdisciplinary teaching, research, and service in aging at WVU. Many units of the University are involved in the teaching and research activities of the Center. A library collection in the Center augments the gerontology holdings of other campus libraries, and is open to the entire community Monday through Friday, 8:30 a.m. to 5:00 p.m.

The Center also offers a graduate gerontology certificate, and a continuing education practitioner certificate for persons who are currently working with the elderly. Further information, assistance in academic program planning in multidisciplinary gerontology, and registration forms may be obtained from Betty Maxwell, Administrative Assistant, WVU Gerontology Center, Chestnut Ridge Professional Building, Morgantown, WV 26506. Telephone: (304) 293-2081.

Faculty

Rick A. Briggs
Gerontology associates

Courses of Instruction in Gerontology (Geron.)
Upper Division
291. A. *Special Topics.* I, II. 3 hr. PR: MDS 50 and consent.
291. B. *Special Topics.* I, II. 1-3 hr. PR: Consent. Special problems for undergraduate and graduate students working on gerontology certificate programs. Topics change from semester to semester. Students can enroll more than once. (Does not qualify for LSP credit.)

Other courses on aging can be found in departments throughout the University. Required courses for Undergraduate Certificate in Gerontology include: MDS 50 *Introduction to Gerontology* and MDS 250 *Issues in Gerontology* (See Multidisciplinary Studies section). Electives for the certificate include such courses as: Com. 140 *Communication and Aging* (see Communication Studies section), Soc. & A. 162 *Sociology of Aging* (see Sociology & Anthropology section), and Psych. 245 *Adulthood and Aging* (see Psychology section).
For a complete listing of aging-related courses that supply elective credit toward the undergraduate certificate, contact the Gerontology Center, Chestnut Ridge Professional Building, 912 Chestnut Ridge Road, Morgnatown, WV 26505. Telephone: (304) 293-2081.

Multidisciplinary Studies

Multidisciplinary Studies (MDS) courses analyze significant issues, problems, or themes by applying two or more disciplines to them; explore the theoretical and methodological relationship of two or more disciplines to each other; and involve a combination of disciplines so as to preclude their being classified realistically as one of humanities, social sciences, or physical sciences.

Responsibility for approving MDS courses rests with the Liberal Studies Program Committee and the Faculty Senate. Each course has its own staff, drawn from the faculties of the colleges and schools of the University. MDS courses may be credited to University LSP, as indicated. Only one multidisciplinary studies course may be counted towardfulfilling Liberal Studies Program requirements in each cluster area. ***

ROTC
Air Force Aerospace Studies
Military Science

West Virginia University offers qualified applicants two- and four-year courses of instruction in Military Science (Army ROTC) and Air Force Aerospace Studies (Air Force ROTC). Normally, successful completion of one of these courses and degree requirements leads to a commission as a second lieutenant in the U.S. Army or the U.S. Air Force.

Equivalent credit for part or all of the four basic semesters of ROTC may be granted in accordance with existing military service regulations. This credit will be awarded on the basis of: prior active military service, high school ROTC, military school (Army ROTC at high school level), attendance at service academies, junior college senior division Army ROTC, or Civil Air Patrol training.

Liberal Studies Program

The dean of a college or school awarding a degree will determine if ROTC courses will be counted as free electives or will be counted toward fulfillment of Liberal Studies Program requirements. Up to three credit hours of ROTC may count toward fulfillment of the LSP requirement in any cluster area.

Deposit

Each ROTC student is required to pay a yearly deposit of $20.00 to cover any loss or damage to issued property in the student's possession. The deposit is paid to the WVU Controller at time of registration and is refunded upon return of undamaged property. Army ROTC refunds the full amount if the property is returned undamaged. Air Force ROTC refunds the full amount if the property is returned undamaged and the uniform freshly cleaned as well. Army ROTC Cadets may purchase their Class A uniforms upon successful completion of the program. Air Force ROTC Cadets (seniors) may purchase their uniforms for one-half of the actual price upon completion of the program.

Wearing of the uniform is not required for the Army ROTC basic course.

U.S. Air Force ROTC
(WVU Division of Aerospace Studies)

Nature of Program

The Air Force officer education program at WVU has been in existence since 1948 and is designed to provide training that will develop leadership, managerial and interpersonal skills vital to the professional Air Force officer. Its purpose is designed to qualify you for commissioning in the U.S. Air Force. West Virginia University has the only Air Force ROTC (AFROTC) detachment in West Virginia. General military courses (GMC) are open to all West Virginia University students. Professional officer courses (POC) are open to students who complete the GMC (four year program) and are selected to attend and successfully complete a four week field training encampment. Two year applicants must be accepted into the two year program and attend and successfully complete a six week field training encampment.

Scholarship Program

Outstanding students from any academic discipline may compete for scholarships under this program. A large number of scholarships are available for students majoring in the engineering, scientific, mathematical, or nursing fields. If you win a scholarship, AFROTC will pay for tuition, fees, and required textbooks, as well as provide a $100 monthly allowance. Scholarships are available for 2, 21/2, 3, and 31/2 years, depending upon funding.

Benefits

Enrolling in Air Force Reserve Officer Training Corps (AFROTC) provides the opportunity to:

* Earn academic elective credit which can be applied toward the requirements for any undergraduate major at WVU.
* Compete for AFROTC scholarships that pay full tuition, fees, and required textbooks, and provide $100 per month (tax free).
* Receive free career counseling from full-time campus representatives.
* Go on field trips to Air Force installations in the United States.
* Try AFROTC during freshman and sophomore years without obligation. Develop leadership and managerial skills in the various Corps projects.
* Compete for entry into the Professional Officer Course (POC) and earn an Air Force commission.
* Travel, on a space available basis, aboard government aircraft (POC and scholarship cadets only).

Distinguished AFROTC Graduate

The Professor of Aerospace Studies may designate as a Distinguished Graduate a POC member who:

* Demonstrates superior academic and field training performance.
* Possesses outstanding qualities of leadership and high moral character.
* Demonstrates clearly exceptional leadership in recognized campus activities.

Distinguished graduates normally compete nationally for Regular Officer commissions.

U.S. Air Force Academy

The president of WVU may annually nominate five outstanding AFROTC students to the U.S. Air Force Academy. Applicants are recommended by the Professor of Aerospace Studies to the WVU President during January of each year.

Veterans Program

Veterans may receive college credit for the first two years of Air Force ROTC if competing for entry into the POC. If you are interested, contact the Professor of Aerospace Studies early in your sophomore year.

Curriculum

The curriculum in Air Force Aerospace Studies is divided into three distinct areas: general military course, leadership laboratory, and professional officer course. In addition, each cadet must take and successfully complete a course in English composition, (satisfied by English 1 and 2), or its equivalent, before completing the general military course. Also, prior to graduation and commissioning, each cadet must complete a course in mathematical reasoning. Scholarship cadets must also take two semesters of a major Indo-European or Asian language prior to graduation.

Leadership Laboratory

Leadership laboratory takes an average of one hour per week throughout the student's enrollment in AFROTC. Instruction is conducted in an organized cadet corps with a progression of experiences designed to develop each student's leadership potential. Leadership laboratory involves a study of Air Force customs and courtesies; drill and ceremonies; career opportunities; and the life and work of an Air Force junior officer. Students develop leadership potential in a practical, supervised training laboratory, which typically includes field trips to Air Force installations throughout the United States.

General Military Course (GMC)

The Air Force course of study offered during the freshman and sophomore years is the General Military Course (GMC). This is composed of one class hour and one leadership laboratory hour per week. Two credit hours are allowed for each semester course successfully completed. Four semesters of the GMC is one method of competing for admission to the POC. However, a two-year POC option is available if you do not complete the GMC.

Professional Officer Course (POC)

The Professional Office Course (POC) corresponds to the junior and senior years of your academic program. Graduate students may also enroll in the advanced course if they have four semesters of school remaining.

The POC is designed to provide highly qualified junior officers for the U.S. Air Force. Admission is based on such factors as leadership, scholarship, physical qualifications, and academic major. Succsssful completion of the advanced course qualifies you for appointment as a second lieutenant in the U.S. Air Force upon receipt of your college degree.

Instruction averages three hours per week throughout the four semesters, plus Leadership Laboratory. Three hours of credit are allowed for each of the four semesters of work in the advanced program subsequent to acceptance by a school or college in the University.

You must meet the following requirements to be eligible for enrollment into the POC:

1. Make application for the POC as soon as possible (usually during the sopho more year), taking into consideration the following items:
   a. Have a 2.0 term and cumulative grade-point average.
   b. Have two years (4 semesters) of undergraduate and/or graduate studies remaining.

c. Be under 30 years of age at the time of commissioning, except that pilot and navigator applicants must not be older than 261/2 years when commissioned, or up to age 29 with prior military service.
2. Pass the Air Force Officer Qualifying Test.
3. Pass an Air Force medical examination.
4. Be accepted by the Professor of Aerospace Studies and AFROTC for one of the Air Force career specialities available.
5. Complete the GMC and/or Field Training (4 weeks for 4-year applicants; six weeks for two year applicants).
6. Agree to accept a commission as a second lieutenant in the USAF and serve at least four years if not on flying status, or six years after completing navigator training, or ten years after completing pilot training.

Faculty
William J. Plutt, Col., M.A., Professor.
James A. Boyer, Maj., M.A., Assistant Professor.
William M. Propst, Capt., M.S., Assistant Professor.
Robert A. Hilling, S.Sgt., Administrative NonCommissioned Officer.
Jeffrey A. Swayze, Sgt., Personnel NonCommissioned Officer.

U.S. Army ROTC (WVU Division of Military Science)

Nature of Program

The Military Science program at West Virginia University is designed to provide: a reserve corps of scholars, citizens, and soldiers; graduates qualified in leadership and management skills, and prepared for public service; and men and women trained to assume responsible positions as commissioned officers in the active army, army reserve, or national guard, as well as business, government, and industry.

Whether a student elects to take only two years of the program while at the University, for which there is no service obligation, or remains for the full four-year program to become an officer, the student is better prepared to make a meaningful contribution in the preservation of American ideals and national security. There are no uniform or haircut requirements for cadets in the Army ROTC basic course.

Scholarship Program

Competitive scholarships are available for two, three, and four years. The government will pay for tuition, fees, and an allowance for textbooks. Additionally, a scholarship student receives $100 per month, tax free, during the academic year as a subsistence allowance. Candidates for the two- and three-year scholarships do not have to be enrolled in Military Science, but must be qualified to enroll. Additional scholarships are available for nursing students and enlisted members of the U.S. Army Reserve or U.S. Army National Guard. Four-year scholarship competition is for high school students only. High school counselors have application forms, or they are available by writing to: Professor of Military Science, Stansbury Hall, West Virginia University, Morgantown, WV 26506.

United States Military Academy, West Point

Outstanding Army ROTC students may be recommended by the Professor of Military Science for ROTC nomination to the United States Military Academy at West Point. The student must meet all academy entrance requirements before being eligible for nomination.

Basic Course (Freshmen and Sophomores Only)

The Basic Course of instruction is for freshman and sophomore students who desire to investigate the possibilities of future government service **without** committing themselves to a military service obligation. The basic course class may be added or dropped as any other courses in the University. Credits earned in ROTC count toward lower-level academic requirements. Additionally, the student gains a social awareness and develops personal values important in civilian life. Uniforms are not required in the basic course.

Advanced Course (Juniors-Seniors-Veterans)

Selected students may participate in Advanced ROTC. It is required of all students who have an ROTC scholarship. Successful completion of the advanced course means earning a reserve commission as a second lieutenant in one of the fifteen branches of the Army which require over 300 occupational skills.

Advanced Course Allowances

Advanced Course students without an ROTC scholarship are given the same subsistence allowance as scholarship students. This allowance provides the student with $100 per month during the academic year.

Advanced Summer Camp

Before commissioning, a student must attend an advanced summer camp of six weeks duration between the junior and senior years. Cadets receive travel allowances and pay equal to one-half the basic pay of a second lieutenant.

Leadership Laboratory
Freshman-Sophomore

Leadership training for freshman and sophomore students is challenging and adventurous. It provides opportunity for students to participate in action-oriented activities which develop self-confidence and self-discipline while encouraging the emerging leader. Rappelling, cross- country skiing, land navigation, and orientation visits to U.S. Army installations are some of the student's choices for participation. An average of one hour a week is required.

Junior-Senior

Leadership instruction is applied by the student in a working laboratory environment. Emphasis is placed on small-unit tactics, drill and ceremonies, physical training, rifle familiarization, and preparation for Advanced Summer Camp.

Two-Year Program (Sophomore and Transfer Students)

Selected applicants are enrolled in a two-year program that leads to an Army commission. The two-year student attends a six-week Basic ROTC Camp. Upon successful completion of this requirement, the student may enter the Advanced ROTC Program and complete the requirements for an officer commission during the two remaining years in school. Transfer students desiring to enter this program should contact the Professor of Military Science, Stansbury Hall, West Virginia University, Morgantown, WV 26506, before March 31 when planning to enter the University in the first semester. WVU sophomores considering participation should contact the Army ROTC office early in the second semester.

Military History

Contracted students must take History 110 *Modern Military History*. The class explores military history from the seventeenth century to the present and includes a study of major world wars and contemporary military alliances. (Offered second semester only.)

Physical Conditioning
Students may voluntarily attend for University credit the physical education offering, *Military Physical Conditioning,* which is conducted each semester by the Army ROTC staff.

Airborne Training
Selected cadets may attend airborne training at Fort Benning, Georgia. Airborne training is three weeks in length; successful completion of the course results in the award of the airborne wings of a military parachutist.

Air Assault Training
Selected students may attend air assault training at Fort Campbell, Kentucky. Airmobile training is 10 days in length; successful completion of the course results in the award of the Air Assault Badge.

Veterans Program
Qualified veterans with six months or more of active military service may receive college credits for the first two years of Army ROTC if they are WVU students. They may immediately enter the Advanced Course if they were contributing to the Veterans Educational Assistance Program while on active duty, or if they have 27 hours of college credit with a 2.0 grade-point average or better.

Faculty
Jerald W. Fisher, Lt. Col., M.A., Professor of Military Science.
John C. Gibson, Jr., Maj., B.A., Associate Professor of Military Science.
Doyle O. Bootle, Maj., M.P.A., Assistant Professor of Military Science.
Charles D. Betoney, Maj., M.A., Assistant Professor of Military Science.
Guy N. DeYoung, Capt., M.A., Assistant Professor of Military Science.
James M. Henry, Capt., B. A., Assistant Professor of Military Science
Albert A. Mrozek, Capt., B.S., Assistant Professor of Military Science.
George R. Mayo, Capt., B. A., Assistant Professor of Military Science.
Duncan C. Currier, Capt., B.S., Assistant Professor of Military Science.
William L. Frisbie, SGM, Chief Instructor. Steven Hutson, M.Sgt., Senior Instructor.
Darrell D. Kimoto, SFC, Senior Instructor.
Christopher Deasy, S.Sgt., Administrative Sergeant.
Miguel A. Nunez-Santiago, Sgt., Supply Sergeant.

University Honors Program

The University Honors Program provides cohesive, integrated honors courses which apply toward the satisfaction of general education and LSP requirements and some requirements for the major.

Admission to the program is by invitation only and is based on ACT or SAT composite standard scores and high school grade-point averages or status as a National Merit Semi-Finalist. Admission to the program by enrolled college students is based on grade-point average on the first 14 to 34 credit hours of college course work. Class sizes are small, affording students an opportunity to participate in individualized, concentrated instruction. It is anticipated that any student accepted into the program will enroll in one honors course each semester, will be a full-time student at WVU (enrolled for at least 12 hours a semester), and will maintain a grade-point average in accordance with standards established by the University Honors Director and the University Honors Council. Academic Program In addition to fulfilling the University Honors Program requirements, honors students fulfill all requirements of the University and major area of concentration. Students enrolled in the University Honors Program

do not take more courses than other students; such students use the honors courses to fulfill part of the University requirements for graduation.

Honors students, in the usual way, enter areas of concentration in which they earn their degrees and fulfill requirements established by the academic areas involved. Diplomas and transcripts indicate both degree earned and the designation University Honors Scholar. Certification as University Honors Scholar is to be completed by the end of the penultimate semester before graduation.

University Honors Scholars complete a minimum of 24 hours in designated honors courses. Of these, three hours are earned in a senior-year seminar and a minimum of three hours and a maximum of six hours credit may be earned in independent study during the summer, consisting of required reading and/or directed individual research studies.

While honors students are expected to enroll in an honors course each semester, demands of professional programs, etc., may make adjustments necessary, with the adviser's approval.

Normally only courses designated as honors courses by the honors director and the honors council count toward fulfillment of the honors program requirements. However, if a student takes courses judged by the council to be rigorous and challenging enough to qualify as honors courses, the student may petition, in advance, the director and council for permission to count the hours as honors hours. In each case, the student must submit a petition to the director and the council for such an exception. Each petition is judged on its own merits, and the director and the council must state in writing the decision reached. This statement is placed in the student's record file and becomes part of the academic record.

When a student is accepted into the University Honors Program, continuance depends upon satisfactory progress in hours earned and maintenance of a satisfactory cumulative grade-point average as outlined below:

1-28 hours earned	3.2
29-88 hours earned	3.3
89 or more	3.4

If a student fails to maintain satisfactory progress toward the degree or to achieve the required minimum cumulative grade-point average, the student is placed on probation in the University Honors Program for one semester. If the student has not achieved the required grade-point average and/or the number of hours completed at the end of that semester, the student will be dismissed from the University Honors Program. This action does not affect the student's standing in the University or in the degree program. It does mean that the student will not be designated a University Honors Scholar upon graduation.

Oak Ridge Associated Universities

West Virginia University is a member of Oak Ridge Associated Universities (ORAU), a nonprofit, education and research management corporation of 49 colleges and universities. ORAU, established in 1946, conducts programs of research, education, information, and human resource development for a variety of government and private organizations. It is particularly interested in three areas: energy, health, and environment.

Among ORAU's activities are competitive programs to bring undergraduate and graduate students and faculty members to work on research problems at the research facilities of the Department of Energy (DOE) and other federal agencies. Participants are selected by ORAU and the staffs of the facilities participating in the ORAU programs, which are Oak Ridge National Laboratory; the Oak Ridge Y-12 Plant; the Oak Ridge Gaseous Diffusion Plant; the Atmospheric Turbulence and Diffusion Division in Oak Ridge; the Savannah River Laboratory in Aiken, S.C.; the Pittsburgh Research Center of the U.S. Bureau of Mines; the National Center for Toxicological Research in Jefferson, AR; the Puerto Rico Nuclear Research Center;

and the U.S. DOE Energy Technology Research Centers in Pittsburgh, Pa., and Morgantown. The ORAU Institute for Energy Analysis, the Professional Training Program, the Medical and Health Sciences Division, and its other programs are also open to qualified students and faculty members.

Professional Internship Program

Program apppointment periods that alternate with terms of full-time academic study at the students' home institutions afford students opportunities to apply the theories and methods learned in the classroom in a research environment under the guidance of a research adviser.

Graduate Internship Program

Internships at federal laboratories relate to the student's major and career goals, provide opportunities to apply theories and methods learned in the classroom, and introduce the student to research areas for consideration as possible thesis or dissertation topics.

Post-Graduate Research Program

Research appointments are available for recent masters and doctoral degree recipients. Up to two years of support for collaborative research at federal labaoratories is provided.

Faculty

Faculty members of WVU, under the ORAU Faculty Reseach Participation Program, can go to a Department of Energy facility for varying periods up to three months, for advanced study and research. It is also possible to combine a sabbatical with a longer appointment. Part-time appointments during the academic year are also available at certain laboratories.

Stipends

Student stipends are at fixed rates that change from time to time. Faculty stipends are individually negotiated, based upon the current University salary.

For more information about the ORAU program, contact Trina Karolchik or Richard A. Bajura, WVU Energy Research Center, 258 Stewart Street, Morgantown, WV 26506, or write to: University Programs Division, Oak Ridge Associated Universities, Inc., P.O. Box 117, Oak Ridge, TN 37830\nd0117.\fl

WVU Extension Service

The WVU Extension Service develops educational programs to meet the needs and concerns of adults and youth throughout the state. The programs fit into the general framework of three broad areas: agriculture, forestry, and community development; home economics and 4-H programs; and continuing education programs. The unique continuing education and conference center at Jackson's Mill is the focal point for off-campus, "away from home" classes and conferences of varying lengths and objectives.

Informational and instructional programs are planned and conducted to meet clientele interests. Program development is a continuous process involving dialogue, joint decision making, and coordination among staff members, other units of the university, U.S. Department of Agriculture, various extension committees, and advisory groups representing the clientele. Program faculty at an extension office in each county provide direct access for extending educational programs to the people. Financing comes from state appropriations to the University, federal funds, county commissions, and county boards of education.

Division of Agriculture, Forestry, and Community Development

The Division of Agriculture, Forestry, and Community Development has six program units: animal sciences, plant sciences, forestry, resource management, community development, and energy. Each unit conducts educational programs and provides technical assistance to enhance rural and economic development. The division collects, translates, and diffuses knowledge that has been generated at WVU and similar institutions and organizations in West Virginia and neighboring states.

Areas of specific interest to the division in pursuit of its educational objectives are improvement of animal, crop, and horticultural production through breeding and management; improvement of pasture and forage production levels; proper utilization of land and conservation of land and natural resources; economical weed and pest control techniques; environmentally and economically sound forestry production, harvesting, and utilization schemes; maintenance of air and water quality; expansion of animal and solid-waste management programs; wildlife management; energy conservation and management; land reclamation; improvement of the leadership and decision-making capabilities of adult and youth community groups, organizations, agencies, and public officials to enhance their efforts to secure better housing, transportation, social services, water and sewage systems, recreational facilities, and local government; energy conservation; efficient use of West Virginia's natural resources—renewable and nonrenewable; improved use of community resources in rural development programs; and production and processing safety.

Division of Home Economics and 4-H

The Division of Home Economics and 4-H provides educational programs to help individuals and families improve their quality of life and to promote the personal development of youth. Programs help individuals identify needs, improve decision making skills, and be more effective in utilization of resources. Programs for the division include health and nutrition education, personal and family resource management, family relations, and volunteer development.

Through the West Virginia Extension Homemakers' program, more than 13,000 women and men participate in organized clubs in every county. Development of leadership capacities is a major goal, participation at local, area and state conferences and seminars designed to enhance individual and organizational leadership skills. Nutrition education is offered under a special federal funded Expanded Food and Nutrition Program and is designed to reach West Virginia's disadvantaged population. Utilizing community-based paraprofessionals, the program seeks to improve the nutritional well-being of limited income families and to expand the nutrition knowledge of youth in West Virginia. A strong food preservation program emphasizes the dissemination of accurate, scientifically based information.

Four-H operates within two variations of the traditional environment. The community-based, family-involved 4-H club provides learning experiences in over 100 subjects with support from community volunteers. A second strategy to enhance youth development is the "away from home" experience represented by 4-H camping and 4-H exchanges between counties, states, and countries. These play an important role in the development of a young person.

Jackson's Mill

Jackson's Mill is one of the nation's unique educational facilities. Operated by the WVU Extension Service, Jackson's Mill became the nation's first State 4-H Camp in 1922. It serves as a statewide conference center for leadership development.

The site of numerous 4-H camps and conferences, Jackson's Mill also provides facilities for other groups as well as adult-oriented organizations for conferences, seminars, retreats, workshops, and credit courses.

The scenic environment of Jackson's Mill offers a special kind of setting for educational opportunities.

Center for Extension and Continuing Education

The Center for Extension and Continuing Education (CECE) offers research and educational programs for personal, professional, and social development. The center includes the Conference Office, Continuing Education Unit (CEU) Program, Applied Research, Evaluation, and Planning, Business and Management Extension, Fire Service Extension, and the Institute for Labor Studies.

The center works with academic departments, faculty, and community leaders to serve special needs, including evening undergraduate credit courses for adults and part-time students. Formats include teleconferences, day and evening short courses, seminars, and intensive workshops. Programs are designed for career update, relicensure, professional development, and personal enrichment.

For further information, call 293-5691, or write Dean, CECE, P.O. Box 6031, West Virginia University, Knapp Hall, Morgantown, WV 26506-6031.

Conference Office

The Conference Office collaborates with academic units, faculty and staff, student organizations, and community and professional groups to provide a multitude of educational activities. Typical programs include the annual music camp, new student orientation, and eastern gas compression roundtable.

Continuing Education Unit (CEU) Program

The Continuing Education Unit (CEU) measures, records, accumulates, transfers, and recognizes participation by adults in non-credit programs. The CEU program gives recognition nationally to persons continuing their education and keeping up-to-date in their chosen fields.

Business and Management Extension

The Business and Management Extension program offers educational activities designed to meet the management information needs of both public and private enterprises.

Fire Service Extension

Fire Service Extension teaches the fundamentals of fire suppression in basic, advanced, and regional schools throughout the state. In addition to fire suppression and rescue training, programs for fire department officers and instructor training programs for training officers and field instructors are offered.

Institute for Labor Studies

The Institute for Labor Studies conducts programs for workers and their organizations. Subject matter ranges from steward training, collective bargaining, work measurement, union administration, job evaluation, and contract administration to liberal arts subjects such as labor and economy, government and society, and labor history. Research ranges from collective bargaining studies and attitude surveys to economic analysis.

Applied Research, Evaluation, and Planning Unit

The Applied Research, Evaluation, and Planning Unit designs and conducts interdisciplinary research relating to social and economic development. Research topics include human resource development, labor-management cooperation, trans-

portation, coal mine health and safety, and energy use and conservation. The unit also conducts educational needs assessments and program evaluation research for the WVU Extension Service, other WVU units, state and federal governmental agencies, and private organizations.

Information and Educational Technology

The Information and Educational Technology unit delivers information to the public through the radio, television, and newspapers; produces communication support materials such as publications, slide/tape sets, videocassettes, and exhibits; and teaches communication skills to extension faculty and staff and other client groups. Undergraduate and graduate internships with the unit are available through the WVU School of Journalism.

The unit also provides technical expertise and leadership in computing technologies for extension information delivery in serving people throughout the state. The unit provides training and consultation to respond to computing technology needs of extension programs.

Management Services Office

The Management Services Office provides accounting, budgetary and personnel support for the WVU Extension Service. The budget is comprised of funds from federal and state regular and grant appropriations; from county commissions and boards of education allocations; and from non-tax support. The office seeks to insure Extension Service compliance with all applicable fiscal and personnel policies.

Office of Technical Support Systems

The Office of Technical Support Systems assists extension faculty and staff in the development of grants and contracts, provides technical computer support, manages the mail service, and oversees the management and inventory of equipment.

Dual Degrees

The coordinated dual degrees in business and foreign languages provide career opportunities for students receiving both a Bachelor of Science in Business Administration and a Bachelor of arts with a major in a foreign language. The B.S.B.A is available with majors in these areas:

Accounting
Finance
Management
Marketing

The foreign languages available as majors for the B.A. include:

French
German
Japanese (tentative)
Russian
Spanish

An important aspect of the dual B.S.B.A./B.A. is the possibility of a business/ foreign language internship earning 16 hours of credit and involving duties related to both business activity and the foreign language and culture and occurring either here in the United States or abroad.

Admission

In addition to University admission requirements, students with fewer than 58 credit hours must have a minimum of two college semesters (or two years in high school) of study of one foreign language and a minimum of three years of high school mathematics. Students must qualify for Math 3 or Math 28 at West Virginia University. Formal admission to the dual program in business and foreign language requires:

- Completion of 58 credit hours;
- Completion of the intermediate course sequence in a single foreign language;
- Attainment of a minimum cumulative grade-point average of 3.0;
- Completion of the following courses with a grade of C or better:
- Six hours of principles of economics;
- Six hours of principles of accounting;
- Three hours of college algebra;
- Three hours of statistics;
- Three hours of calculus;
- Six hours of advanced foreign languages (according to our numbering system for courses, those numbered 103/104 or 109/110);
- Six hours of composition and rhetoric.
- Formal application for admission to the program.

General Requirements

The program of study for the Bachelor of Science in Business Administration and the Bachelor of Arts with a major in foreign languages varies according to a student's particular major and option. Students normally graduate with the required 158 credit hours within five years of entering college as a freshman. The internship, if available, is taken no earlier than the end of the fourth year of undergraduate study. Students not taking the internship must substitute 16 hours of appropriate coursework approved by their advisers.

For additional information, please contact:
Susan Gustin, Director of Undergraduate Advising at the College of Business and Economics or
Nicholas Evans, Ed.D., Assistant Dean, College of Arts and Sciences

Part 7 Courses

Plan for Numbering Courses

For convenience, each course of study is designated by the name of the department in which it is given and by the number of that course. The plan for numbering courses is as follows:

Courses 1-99: Courses intended primarily for freshman and sophomores.

Courses 100-199: Courses intended primarily for juniors and seniors.

Courses 200-299: Courses for advanced undergraduate students and selected graduate students. No more than 40 per cent of the credits counted for meeting requirements for a graduate degree can be at the 200 level.

Courses 300-399: Courses for graduate students, students in professional programs leading to a doctorate, and selected advanced undergraduates. Undergraduates in any class carrying a 300-level course number must have a 3.0 cumulative grade point average and written approval on special forms from the instructor and the adviser. Seniors within 12 semester hours of graduation may, with prior approval of their advisers, enroll in 300-level graduate courses for graduate credit.

In summary, 200-level courses are intended primarily to serve undergraduate students; 300-level courses are intended primarily to serve introductory graduate degrees' course needs.

Courses 391 *Advanced Topics* and **397** *Master's Degree Research or Thesis*: Courses are approved for University-wide use by any academic unit. These courses may be graded S or U.

Courses 400-499: Courses for graduate students only. All doctoral degree dissertation hours are awarded at the 400-level, specifically under course number 497. Courses numbered 497 may be graded S or U.

Courses 492-495: Courses are approved by the assistant vice president for curriculum and instruction. Approved requests are forwarded to the Office of Admissions and Records for entry into the WVU *Schedule of Courses*. Graduate degree credit-hour requirements must include at least 60 per cent at the 300 and 400 level.

Abbreviations Used in Course Listings

I: a course given in the first (fall) semester.
II: a course given in the second (spring) semester.
I, II: a course given each semester.
I and II: a course given throughout the year.
Yr: a course continued through two semesters.
S: a course given in the summer.
hr: credit hours per course.
lec: lecture period.
rec: recitation period.
lab: laboratory period.
Conc: concurrent registration required.
PR: prerequisite.
Coreq: corequisite.
consent: consent of instructor required.
CR: credit but no grade.

An asterisk (*) following credit hours listed as variable indicates that the course normally carries three credit hours. Exceptions are made only in emergencies and must be approved by the departmental chair and by the professor teaching the course.

Schedule of Courses

Before the opening of each semester and the summer sessions, a *Schedule of Courses* is printed, announcing the courses that will be offered by the colleges and schools of WVU.

Course Descriptions

Accounting (Acctg.)

To enroll in any upper-division, undergraduate business course offered by the College of Business and Economics, an undergraduate student must have completed these prerequisite courses: six hours of principles of economics; six hours of principles of accounting; three hours of statistics, Math. 28 or Math. 14; and three hours of calculus (Math. 128 or Math. 15); and have a 2.5 GPA. In addition, the student must have successfully completed six hours of composition and rhetoric. Exceptions to this policy must be approved by the chairperson of the department offering the course.

51. *Principles of Accounting.* 3 hr. PR: Sophomore standing. The accounting cycle from the analysis of business transactions through the preparation of financial statements; basic theory and practice with respect to accounting for assets and equities.

52. *Principles of Accounting.* 3 hr. PR: Acctg. 51. Utilization of accounting information for purposes of managerial control and decision making; cost concepts, profit and financial budgeting, analysis of financial statements.

111. *Intermediate Accounting.* 3 hr. PR: Grade of A or B in Acctg. 52. Development of accounting theory and practice, with emphasis on asset accounting.

112. *Intermediate Accounting.* 3 hr. PR: Grade of C or better in Acctg. 111; Acctg 200. Theory and practice with respect to accounting for liabilities and stockholder's equity; special problems peculiar to financial accounting; analysis of financial statements and changes in financial position.

115. *Cost Accounting.* 3 hr. PR: Acctg. 52; Math. 128. Fundamentals of cost determination with emphasis on the significance of cost data and their interpretation; process, job-order, and standard costs.

116. *Managerial Accounting.* 3 hr. (No credit available to students having credit for Acctg. 115.) PR: Acctg. 52. For non-accounting majors. Analysis of internal accounting practices with emphasis on use of data for performance evaluation, control, motivation through accounting systems, and decision- making.

200. *Special Topics.* 1-4 hr. PR: Acctg. 111 or consent. Special topics relevant to accounting. (Maximum of 9 semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward bachelor's and master's degrees.)

210. *Advanced Accounting.* 3 hr. PR: Acctg. 112. Accounting for business combinations, consolidations, foreign currency translation, governmental and not-for-profit entities, and equity method investment accounting.

211. *Accounting Systems.* 3 hr. PR: C.S. 5, Acctg. 115, Acctg. 112 or consent. Analysis of data processing fundamentals and information systems analysis, design, and implementation, including necessary computer hardware and software components with particular reference to accounting information systems and the controls necessary therein.

213. *Income Tax Accounting.* 3 hr. Conc.: Acctg. 111 or 116 or consent. Overview and survey of Federal income tax principles for individuals and simple corporations with emphasis on gross income, exemptions, deductions, capital gains and losses, and tax credits.

214. *Income Tax Accounting.* 3 hr. PR: Acctg. 213 or consent. The study of Federal income tax treatment of partnerships, corporations and estates, and the treatment of those property transfers subject to the Federal Gift Tax, together with an introduction to tax research and tax procedure.

216. *Advanced Managerial Accounting.* 3 hr. PR: Acctg. 111 and 115 or 116. Special problems in cost accounting, including tax planning, inventory control, and decision models on C.P.A./C.M.A. examination. Selected problems and cases will be used.

217. *Auditing Theory.* 3 hr. PR or Conc.: Acctg. 210. Auditing fundamentals objectives, ethics, statistical samplings, standards and procedures. Emphasis on FASB and SAS disclosures.

218. *Auditing Practice.* 3 hr. PR: Consent. Application of auditing theory and procedures, with emphasis on decisions which invoke judgment and are important in independent audits; audit working papers and reports; case studies.

224. *Advanced Accounting Problems.* 3 hr. PR: Minimum of 18 hr. in accounting with an average grade of B or higher. Analysis and solution of representative C.P.A. problems.

230. *Advanced Accounting Theory.* 3 hr. PR: Acctg. 112, 115, and consent. Critical analysis of accounting concepts and standards with emphasis on their origin, development, and significance.

299. *Independent Study.* 1-3 hr. PR: Consent. Students will develop and complete a program of specialized studies under the supervision of a cooperating instructor. This program may not include credit for internships or employment experience.

Advertising (Adv.)

113. *Principles of Advertising.* I, II. 3 hr. PR: Journ. 1, 15, and admission to the School or consent. Advertising in the American economic system for national and retail advertisers. Study of individual advertising and media, copy and layout problems, appeals, research production, schedules, federal and state laws affecting advertising, and ethics. Practical laboratory work in writing and layout of advertising. 2 lec., one 2-hr. lab.

115. *Copywriting.* I, II. 3 hr. PR: Admission to the School and Adv. 113 or consent. Introduction to advertising copywriting; history and thought process of copywriting and copy strategies/platforms; print and broadcast copy. 2 hr. lec., 2 hr. lab.

201. *Retail Advertising.* I, II. 3 hr. PR: Adv. 115, 203, and admission to the School or consent. Strategic advertising planning for retail merchants. Writing ads to meet objectives. Sales management and sales of local advertising time and space. Exercises in newspaper, radio, TV, direct marketing, outdoor advertising, specialty advertising, etc.

203. *Media Analysis.* I, II. 3 hr. PR: Journ. 15, Adv. 113 and admission to the school, or consent. Survey of local and national media; identification and use of standard media resources; creation of media plans based on advertisers' strategic plans; introduction to computer media planning.

221. *Mass Communications Research Methods.* 3 hr. PR: Journ. 1, 15; and Journ. 18 or PR 111 or Adv. 113 or BN 117. A broad study of scientific and critical research methods as they apply to mass media practices; review of relevant sources for historical data gathering, readership and audience analysisl; evaluation of marketing and public opinion research. 2 hr. lec., 1 hr. field work.

239. *Seminar in Advertising Management Problems.* I, II. 2 hr. PR: Senior standing and major or minor in advertising. Application of the study of advertising research, law, and theory in the preparation of a national advertising campaign. Aspects of the campaign to cover marketing, research, creative, media, sales promotion, and presentation.

242. *Practicum.* Journalism majors only. 1-2 hr. PR: Foundation courses in one of the sequences. Student must have a signed contract detailing terms of the learning experience. 8-20 hours per week for minimum of 10 weeks, while taking other courses. (Graded on Pass/Fail basis.) 1-2 hr. work experience.

250. *Advertising Research.* 3 hr. PR: Adv. 203 or consent. Overview of basic social science research with applications in advertising. Identification and use of research data provided by syndicated advertising research firms. 3 hr. lec.

251. *Direct Marketing.* II. 3 hr. PR: Journ. 15, Adv. 113 and 115 or consent. Mailing, marketing, and creation of direct-mail letters, brochures, involvement pieces, and reply cards; postal regulations, direct-mail law, and printing procedures.

259. *Campaigns.* I, II. 3 hr. PR: Adv. 115, 203, Journ. 221, and senior standing, or consent. Complete campaigns for simulated local stores and national businesses; evaluations based on professionalism of all facets of the campaign

Agricultural Biochemistry (Ag. Bi.)

210. *Introductory Biochemistry.* I, II. 3 hr. PR: Two semesters of general chemistry and one semester of organic chemistry. The biochemistry of the proteins, carbohydrates, lipids, nucleic acids, enzymes, coenzymes, and cellular metabolism in plants and animals.

211. *Introductory Biochemistry Laboratory.* I. 1 hr. Conc.: Ag. Bi. 210. Experiments to demonstrate certain principles and properties of animal and plant biochemicals.

212. *Nutritional Biochemistry.* II. 3 hr. PR: Ag. Bi. 210 or consent. Nutritional biochemistry of domestic animals.

213. *Nutritional Biochemistry Laboratory.* II. 1 hr. PR: Ag. Bi. 210, 211; Conc.: Ag. Bi. 212. Experiments to determine the nutritional constituents in animal and plant tissues.

Agricultural Economics (Ag. Ec.)

(Economics 51 or 54 is a required prerequisite for all courses in Agricultural Economics numbered 100 or above.)

10. *Agribusiness Accounting.* I. 4 hr. Accounting for business managers who do not intend to become accountants. (Students having prior college credit in accounting are not eligible for this course.) A brief coverage of terminology and methodology; decisions in accounting as directed by executives; interpretations and values from accounts and accounting statements.

50. *Introductory Agricultural and Agribusiness Economics.* 4 hr. Introduction to basic agricultural and agribusiness economic concepts and application of microcomputers in solving production, marketing, financial and management problems faced by agribusiness. (3 hr. lec., 1 hr. lab.)

104. *Farm Management.* I or II. 3 hr. The decision-making process; procedures for profit maximation; principles in assembling, analyzing, and using farm business records; the use of budgeting in evaluating alternatives.

190. *Agricultural and Natural Resources Law.* I. 3 hr. PR: Consent. Introduction to legal concepts, principles, practices, and issues as related to agricultural and forestry production, agribusiness and private recreation operations, non-consumptive land uses and environmental effects. Includes contracts, torts, real property, and regulation. Field trips required.

195. *Senior Seminar, Agricultural Economics.* I. 1 hr. PR: Senior standing, major in resource management. A seminar to explore selected issues in agricultural economics for seniors majoring in resource management. The seminar is oriented to the

consideration of current economic issues, potential employment responsibilities, and advanced study opportunities.

200. *Land Economics.* II. 3 hr. Classification, development, tenure, use, conservation, valuation, and taxation of rural, urban, mineral, forest, water, and recreational land resources. Private and public rights in land and the effect of population on the demand for land.

206. *Farm Planning.* I. 3 hr. PR: Ag. Ec. 104 or consent. Planning use of labor, soil, crops, livestock, buildings, and equipment; principal factors influencing returns on farms. (Farm visits required.)

211. *Rural Economic Development.* I or II. 3 hr. Resource utilization, economic behavior and economic systems and subsystems, trade, public revenue and its allocation, distribution of income, manpower problems, development policies, and regionalization in rural areas.

220. *Agricultural Cooperatives.* 3 hr. PR: Ag. Ec. 50 or consent. History, principles, organization, management, taxation, and legal aspects of agricultural and marketing, supply and service cooperatives in the U.S. economic system. (3 hr. lec.) (Offered in Spring of odd years.)

231. *Marketing Agricultural Products.* I or II. 3 hr. Market organization, policies, practices, and factors affecting the marketing of agricultural products. (Tour of market agencies and facilities required.)

235. *Marketing Dairy Products.* II. 2 hr. Milk-marketing policies and practices, including milk-market orders. (Offered in Spring of odd years.)

240. *Agricultural Prices.* I. 3 hr. Analysis of price-making forces which operate in the market places for the major agricultural commodities.

261. *Agribusiness Finance.* II. 3 hr. Credit needs for agricultural businesses, financing farm and market-agency firms, and organization and operation of credit agencies which finance agricultural business firms.

271. *Agricultural Policy.* II. 3 hr. Examination of economic aspects of governmental price programs, production and marketing controls, subsidies, parity, export and import policies, and other programs affecting agriculture.

Agricultural Education (Ag. Ed.)

62. *Microcomputer Applications in Agricultural Education.* 3 hr. PR: Consent. Microcomputer applications in the instructional process of agricultural education; use of applications software, agricultural software, and data bases; and methods of integrating microcomputers into high school vocational agriculture programs. (1 hr. lec., 2 hr. lab.)

160. *Materials for and Method of High School Teaching of Vocational Agriculture.* I. 3 hr. PR: Consent. Organization and preparation for teaching vocational agriculture in and through the high school. (Also listed as C&I 160.)

162. *Group Organization and Leadership.* I. 3 hr. Study of the impact of leaders and organized groups on societies. Role of groups in conveying cultural norms. Principles and techniques involved in forming and directing organizations in providing effective leadership.

188. *Student Teaching.* I, II. 8 hr. PR: C&I 7, Ed. P. 105 and 106. (See C&I 188.)

260. *Principles of Cooperative Extension.* I. 2 hr. PR: Consent. Background, philosophy, and history of cooperative extension. Activities of county cooperative extension agents and cooperative extension programs in West Virginia.

261. *Methods and Materials in Extension Education.* II. 2 hr. PR: Consent. Organization and preparation for extension teaching and the processes of communication.

263. *Teaching Young, Adult Farmer, and Off-Farm Agricultural Occupations Classes.* I. 2 hr. PR: Ed. P. 105, 106 or consent. Participation in conducting young farmer, adult farmer, and off-farm agricultural occupations classes; organization, course of study, method in teaching, and supervision of classes, young farmers' associations, adult farmers' organizations, and off-farm agricultural occupations organizations. (Also listed as C&I 263.).

264. *Cooperative Vocational Education.* II. 4 hr. PR: Consent. Preparation for planning, organizing, and conducting high school programs of cooperative vocational education, and familiarization with business organization and operation. (Also listed as C&I 264.)

Agricultural Mechanics (AgrM)

120. *Shop Theory and Methods.* I, II. 4 hr. Six areas of basic shop work: carpentry, cold metal work, hot metal work (forge, electric and gas welding), sheet metal (soldering, forming, cutting, riveting), tool care, and plumbing. 1 hr. rec., 6 hr. lab.

150. *Engineering Technology for Urban Watersheds and Irrigation.* 3 hr. Soil and water management; analysis of small watersheds and design of waterways, culverts, ponds, sediment basins, and turf irrigation systems. 3 hr. lec.

230. *Farm Structures.* II. 3 hr. Study of structures required for agriculture, family housing, storage, and recreation. Includes function, planning, layout, materials, construction techniques, prefabrication, repair, remodeling, and costs. 2 hr. rec., 3 hr. lab.

240. *Agricultural Engines.* I, II. 3 hr. Study of power sources (gasoline, diesel, turbine, wankel, etc.) for agriculture and forestry. Operation, selection, maintenance techniques, and emissions impact on power and fuel efficiency. 2 hr. rec., 3 hr. lab.

260. *Advanced Farm Machinery.* I. 3 hr. Systems approach to selection, use, and operation of machinery as related to agriculture, forestry, and other rural activities. Emphasis on safety and environmental impact. Use of records for management decisions, purchase, replacement, sale, or overhaul. 2 hr. rec., 3 hr. lab.

270. *Electricity and Lighting.* 3 hr. Properties of electricity and electrical circuits, residential wiring, selection of electric motors, use of electrical controls; and design of interior lighting, landscape lighting, and flood lighting systems. (Field trip required.)

280. *Agricultural Mechanics Problems.* 1-4 hr. PR: C or better in an Agr.M. course. Special projects and problems in theoretical analysis, design, or construction. 1-4 hr. conference.

Agriculture and Forestry (Ag. & F.)

180. *Assigned Topics.* I, II, S. 1-4 hr. Assigned studies of an interdisciplinary nature with a particular specialty area in agriculture and forestry. Students must be in good standing and have prior approval of a proposed outline from the Division Director's Office.

190. *Professional Development.* I, II, S. 1 hr. per sem. PR: Cooperative education commitment. Evaluation of cooperative education experience in an independent work-study program.

295. *Professional Field Experience.* I, II, S. 1-12 hr. PR: Division approval of planned program. Junior or senior standing recommended. Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competency development. (Pass/Fail Grading.)

Agriculture (Agrl.)

11. *Professions in Agriculture.* I. 1 hr. Survey of the subject- matter disciplines available to agriculture graduates. Study of all the dimensions of the industry of agriculture.

12. *Professions in Agriculture.* II. 1 hr. Continuation of Agrl. 11.

200. *Agricultural Travel Course.* S. 1-6 hr. Tour and study of production methods in major livestock and crop regions of the United States and other countries. Influence of population, climate, soil, topography, markets, labor, and other factors on agricultural production.

Agronomy (Agron.)

2. *Principles of Soil Science.* II. 4 hr. PR: Inorganic chemistry. An introduction to soil science. 3 lec., 1 lab.

10. *Forest Soils.* I. 3 hr. PR: Inorganic chemistry. Principles of soil science with particular reference to forest soils. 2 lec., 1 lab.

115. *Soil Judging, Mapping, and Interpretation.* I. 3 hr. PR: Agron. 2 or 10. Techniques in observing and describing soil profiles, mapping by modern systems and interpreting basic soil surveys for varied soil use.

150. *Turfgrass Management.* 3 hr. PR: Agron. 2 and Pl. Sc. 52, or consent. Establishment, maintenance and adaptation of grasses for lawns, golf courses, parks, athletic and playing fields, and roadsides. Associating differential plant responses with soil, climatic, and biotic factors. 3 hr. lec. (Offered in Fall of odd years.)

210. *Soil Fertility.* I. 3 hr. PR: Agron. 2 or 10. Soil properties in relation to fertility and productivity of soils; scrutiny of essential plant nutrients; use of fertilizers and lime; evaluation of soil fertility.

212. *Soil Conservation and Management.* I. 3 hr. PR: Agron. 2 or 10. Using soil technology to solve soil management problems relating to cropping systems. Field diagnosis of soil problems stressed. 2 lec., 2 lab.

230. *Soil Physics.* II. 3 hr. PR: Agron 2 or 10. Physical properties of soils; water and air relationships and their influence on soil productivity. (Offered in Spring of even years.)

251. *Weed Control.* I. 3 hr. PR: Pl. Sc. 52, Agron. 2, or consent. Fundamental principles of weed control. Recommended control measures for and identification of common weeds. 2 lec., 1 lab. (Offered in Fall of odd years.)

252. *Grain and Special Crops.* II. 3 hr. PR: Pl. Sc. 52, Agron. 2, or consent. Advanced study of methods in the production of grain and special crops. Varieties, improvement, tillage, harvesting, storage, and use of crops grown for seed or special purposes. (Offered in Spring of even years.)

254. *Pasture and Forage Crops.* I. 4 hr. PR: Pl. Sc. 52, Agron. 2, or consent. All phases of pasture and forage crop production, including identification, seeding, management, use, seed production, and storage of forage crops. 3 lec., 1 lab.

255. *Reclamation of Disturbed Soils.* 3 hr. PR: Junior standing or above and consent. Pedologic definitions and principles will be applied to advanced planning and analysis, handling and placement, reclamation and revegetation practices, and continuing use of disturbed soils resulting from mining and urbanization activities. (Field trip required.)

Air Force and Aerospace Studies (AFAS)

GMC. First Year (AFROTC) (AFAS 1 & 2)

1. 2 hr. The Air Force in the contemporary world through a study of the total force structure, strategic offensive and defensive forces, general purpose forces, aerospace support forces and separate operating agencies. (Also includes Leadership Laboratory as described above.)

2. 2 hr. Continuation of AFAS 1. GMC

Second Year (AFAS 3 & 4)

3. 2 hr. The development of air power from dirigibles and balloons through the peaceful employment of U.S. air power in relief missions and civic actions programs in the late 1960's and the air war in Vietnam; leadership and managerial communicative skills are stressed by having students prepare both written and oral presentations. (Also includes Leadership Laboratory as described above.)

4. 2 hr. Continuation of AFAS 3.

POC—Third Year (AFROTC) (AFAS 105 & 106)

105. 3 hr. PR: GMC or equiv. (Equivalent credit may be granted by WVU Director of Admissions and Records and the Professor of Aerospace Studies on the basis of prior military service or ROTC training other than courses in Aerospace Studies and 6 weeks field training.) Course focuses on leadership, management, and the progressive development of communicative skills needed by junior officers. It emphasizes the individual as a manager in the Air Force. Individual motivational and behavioral processes, leadership, communication and group dynamics are covered to provide a foundation for the development of the junior officers' professional skills. Organizational power, politics and managerial strategy and tactics are discussed within the context of business and military organizations. Students will make field trips, prepare individual and group presentations for class, write reports, and participate in group discussions, seminars, and conferences. (Also includes Leadership Laboratory as previously described.)

106.3 hr. PR: AFAS 105. Continuation of AFAS 105.

POC—Fourth Year (AFAS 107 & 108)

107.3 hr. PR: AFAS 105 and 106. The course is a study of U.S. national security policy which examines the formulation, organization, and implementation of national security; context of national security; evolution of strategy; management of conflict; and civil-military interaction. It also includes blocks of instruction on the military profession/officership and the military justice system. The course is designed to provide future Air Force officers with a background of U.S. national security policy so they can effectively function in today's Air Force.

108.3 hr. PR: AFAS 105, 106, 107. Continuation of AFAS 107. AFAS 1, 2, 3, 4, 105, 106, 107 and 108 may be taken out of sequence, if unusual circumstances warrant and the student has received approval from the Professor of Aerospace Studies.

Animal Nutrition (An. Nu.)

101. *Animal Nutrition.* II. 3 hr. PR: Two courses in chemistry. Digestion and metabolism of food nutrients, nutrient requirements of farm animals, and nutritive values of feeds and rations.

102. *Applied Nutrition.* I. 3 hr. PR: An. Nu. 101. Feedstuffs, feed processing storage and additives, nutrient requirements and ration formulation for beef and dairy cattle, sheep, and horses. 2 hr. lec., 1 hr. lab.

103. *Applied Nutrition.* II. 3 hr. PR: An. Nu. 101. Applied feeding practices, nutrient requirements and ration formulation for poultry, swine, laboratory and companion animals. 2 hr. lec., 1 hr. lab.

Animal Physiology and Breeding (An. Ph.)

100. *Introduction to the Physiology of Domestic Animals.* I. 3 hr. PR: Biol. 1 and 2 or consent. The function and regulation of the principal systems of the animal body.

200. *Animal Growth and Lactation Physiology.* II. 3 hr. PR: An. Ph. 100, or consent. Animal life cycles; nature of growth and lactation; effects of biological, environmental, and social-psychological variants; physiological regulation and control. 3 hr. lec.

204. *Animal Physiology Laboratory.* I. 2 hr. PR: An. Ph. 100 or consent. Laboratory study of the physiological systems of animals and the influences of environment on these systems.

225. *Physiology of Reproduction.* II. 3 hr. PR: Course in biology. Comparative physiology of reproduction in higher animals; endocrine functions involved in reproduction; genetic and environmental variations in fertility mechanisms.

226. *Breeding of Farm Animals.* I. 3 hr. PR: Course in genetics or consent. Application of principles of quantitative genetics to the improvement of farm animals.

280. *Behavioral Patterns of Domestic Animals.* II. 3 hr. Examination of the bases for exhibition and control of behavioral patterns of domestic animals. 1 lab.

Animal Production (An. Pr.)

* Generally, transportation for trips required by these courses is supplied by the College. Food and lodging are the responsibility of the student.

108. *Animal Production Experience.* I, II. 1 hr. A maximum of 4 credit hours may be earned by enrolling in this course. Experience in operating a poultry, dairy, or livestock farm, including trapnesting, incubation, and pedigreeing poultry; feeding, handling, calving, lambing, or farrowing of dairy and beef cows, sheep, and hogs. 3 hr. lab.

137.* *Dairy Cattle History and Selection.* II. 3 hr. To familiarize the student with the breeds of dairy cattle as well as modern concepts in phenotype and performance record evaluation. 2 labs.

138.* *Grading and Selection of Meat and Meat Animals.* II. 3 hr. Appraisal of live animals and evaluation of scientific techniques used in selecting animals. Tours of representative flocks and herds will be required. 2 labs.

139.* *Selection, Evaluation, and Grading of Meat Animals.* I. 2 or 4 hr. PR: An. Pr. 138 and consent. Evaluation of breeding merit and potential carcass characteristics of red meat animals. Tours of representative flocks and herds will be required.

140.* *Poultry Production* 1. 3 hr. PR: An. Nu. 101. Special phases of broiler and egg production, disease control, labor-saving studies, and recent designs in housing and equipment for all types of poultry. 3 hr. lec.

141.* *Beef Production.* I. 3 hr. PR: An. Nu. 101. Applying the principles of breeding, nutrition, physiology, and economics for the production of beef cattle.

142.* *Pork Production.* I. 3 hr. PR: An. Nu. 101. Physiological and economical bases of pork production. 1 lab. (Offered in Fall of odd years.)

144.* *Light Horse Science.* II. 3 hr. PR: An. Nu. 101. The application of breeding, nutrition, physiology, and pathology to production and management of light horses. 1 lab.

145.* *Milk Production.* II. 3 hr. PR: An. Nu. 101. Feeding and management of dairy cattle. 1 lab.

146.* *Sheep Production.* II. 3 hr. PR: An. Nu. 101. Physiological and economical bases of sheep production. 1 lab. (Offered in Spring of even years.)

250. *Current Literature in Animal Science.* I. 3 hr. PR: An. Nu. 101. Evaluation of current research in animal science and its application to production and management.

Animal and Veterinary Science (A&VS)

50. *Introduction to Animal Science.* II. 2 hr. Survey of major disciplines in animal and veterinary sciences with emphasis on related terminology; study of the development of breeds of livestock and their identification.

51. *Principles of Animal Science.* I. 4 hr. A comparative study of the production of meat, milk, eggs, and wool. Nutrition, physiology, genetics, hygiene and physical environment, and economics are discussed as bases for sound managerial decisions. 1 lab.

180. *Assigned Topics.* I, II, S. 1-4 hr. per sem. In order to be eligible to register in A&VS 180, the student must: (1) be in good standing, and (2) obtain approval of the instructor supervising the topic and the instructor assigned responsibility for the course.

190. *Teaching Practicum.* I, II, S. 1-3 hr. Teaching practice as a tutor or assistant in Animal Science.

191. *Special Topics.* I, II, S. 1-3 hr.

195. *Seminar.* II. 1 hr. Senior seminar.

197. *Honors.* I, II, S. 1-3 hr. Independent reading and study.

201. *Values and Ethics.* 3 hr. PR: Senior standing or consent. Ethical aspects of current concerns in agriculture and forestry and the impact of these topics on societal values. 3 hr. sem.

Arabic (Arab.)

1. *Elementary Modern Standard Arabic.* I. 3 hr. Elementary modern standard Arabic.

2. *Elementary Modern Standard Arabic.* II. 3 hr. PR: Arab. 1. Cont. of Arab. 1.

3. *Intermediate Modern Standard Arabic.* I. 3 hr. PR: Arab. 1, 2 or equiv. Cont. of Arab. 2.

4. *Intermediate Modern Standard Arabic.* II. 3 hr. PR: Arab. 3 or consent. Cont. of Arab. 3.

Art (Art)

3. *Materials and Procedures.* I, II, S. 3 hr. For elementary education majors. Desined to familiarize the student with two- and three-dimensional media, processes, and concepts.

11. *Drawing.* I, II. 3 hr. Fundamental principles of drawing.

12. *Drawing.* I, II. 3 hr. (Complementary to Art 11.) Fundamental principles of drawing.

30. *Appreciation of Visual Arts.* I, II, S. 3 hr. The study of outstanding works of the visual arts from times past to the present: (1) sources of the creative impulse, and (2) relationship of art to the civilization producing it.

100. *Directed Art Studies.* I, II, S. 1-3 hr. (May be repeated for credit.) PR: Consent. Studies in painting, sculpture, printmaking, graphic design, ceramics, drawing, art education, art history; includes independent study.

105. *Survey of Art.* I. 3 hr. History of visual art from prehistoric times to the Renaissance.

106. *Survey of Art.* II. 3 hr. History of visual art from the Renaissance to the present.

113. *Painting.* I, II. 3 hr. PR: Art 12, 121 or equiv. Basic concepts and techniques in watercolor and/or acrylic painting.

114. *Painting.* I, II. 3 hr. PR: Art 12, 121 or equiv. Basic concepts and techniques in oil painting.

121. *Visual Foundation.* I, II. 3 hr. Visual perception, composition, manipulation of materials, and exploration of two-dimensional formal elements.

122. *Visual Foundation.* /I II. 3 hr. (Continuation of Art 121.) Three-dimensional formal elements.

123. *Graphic Design.* I, II. 3 hr. PR: Art 12, 121 or equiv. An introduction to the tools, materials, and basic principles of graphic design with emphasis on form and color.

124. *Graphic Design.* I, II. 3 hr. PR: Art 123 or equiv. (Complementary to Art 123, with particular emphasis on typographic solutions.) An introduction.
126. *Sculpture.* I, II. 3 hr. PR: Art 12, 122 or equiv. An introduction to basic sculptural concepts using simple materials and techniques.

127. *Sculpture.* I, II. 3 hr. PR: Art 126 or equiv. Extension of Art 126, using more complex materials and techniques.

130. *Printmaking.* I, II. 3 hr. PR: Art 12, 121 or equiv. Basic concepts and techniques of intaglio printmaking.

131. *Printmaking.* I, II. 3 hr. PR: Art 12, 121 or equiv. Basic concepts and techniques of lithographic printmaking.

140. *Ceramics.* I, II. 3 hr. PR: Art 12, 122 or equiv. Basic concepts, techniques, and media in ceramics.

141. *Ceramics.* I, II. 3 hr. PR: Art 12, 122 or equiv. (Complementary to Art 140). Fundamental concepts, techniques, and media.

165. *Art Education in the Elementary School.* I. 3 hr. PR: Art 12, 122 or equiv. The content and character of art education at the elementary level, emphasizing methods and techniques of instruction.

166. *Art Education in the Secondary School.* II. 3 hr. PR: Art 12, 122 or equiv. The content and character of art education at the secondary level, emphasizing methods and techniques of instruction.

200. *Directed Art Studies.* I, II, S. 1-15 hr. (May be repeated for credit.) PR: Consent. Studies in painting, sculpture, printmaking, graphic design, ceramics, drawing, art education, art history; includes independent study.

211. *Figure Drawing.* I, II, S. 3 hr. (May be repeated for credit.) PR: Art 12, 121 or equiv. A course in compositional structure from the figure.

212. *Advanced Drawing.* I, II, S. 3 hr. (May be repeated for credit.) PR: Art 211 or equiv. Advanced tutorial drawing course.

Astronomy (Astro.)

106. *Descriptive Astronomy.* I. 3 hr. The celestial sphere, star time, solar time, Kepler's laws, H-R diagram and modern developments. No sophisticated mathematics used; only simple geometrical arguments employed.

216. *Astronomy for Teachers.* S. 3 hr. PR: Consent. Basic concepts and methods in astronomy and how to teach them using the celestial sphere and geometrical tools. Observational work at night. The use of a telescope and camera.

255. *Intermediate Astronomy.* I. 3 hr. PR: Math. 16 or consent. Measurement of the universe; trigonometric parallax, statistical parallax, moving clusters, cluster H-R diagrams, masses of various binary systems, Kepler's Laws, and the three-body problem.

Biology (Biol)

1. *General Biology.* I, II, S. 3 hr. PR or Conc.: Biol. 3. Introductory course in biology: cellular, organismal, and population genetics, including reproduction, growth and development, and evolution.

2. *General Biology.* I, II, S. 3 hr. PR or Conc.: Biol. 4. Introductory biology: energetics and physiology of cells, organisms, and populations, including regulation and control of multicellular organisms.

3. *General Biology Laboratory.* I, II, S. 1 hr. PR or Conc.: Biol. 1. Experiments in biology: genetics and evolution; reproduction, growth, and development of cells, organisms, and populations.

4. *General Biology Laboratory.* I, II, S. 1 hr. PR or Conc.: Biol. 2. Experiments in biology: materials exchange, actions of enzymes, photosynthesis and respiration, and physiology of organisms.

15. *Principles of Biology.* I. 4 hr. An introductory course presenting basic principles of modern biology. This course represents the first in a four-course, integrated sequence required of biology majors. Topics include ecology and evolution, organismal biology, and cell/molecular biology.

17. *The Functional Diversity of Organisms.* II. 4 hr. PR: Biol. 15 or Biol. 1-4. Continuation of Biol. 15. The diversity of reproductive, developmental, functional, and integrative mechanisms in plants and animals.

19. *The Living Cell.* I. 4 hr. PR: Chem. 15 or 17; Biol. 17 or Biol. 1-4. Continuation of Biol. 17. Structure, function, and diversity of cells with an emphasis on gene expression and cellular phenotype, including cell chemistry, energetics, and regulation of cell activities.

21. *Ecology and Evolution.* 4 hr. PR: Biol. 19 or Biol. 1-4. Continuation of Biol. 19. Basic concepts in evolution and ecology including Darwin's theory of natural selection, modern population genetics, speciation, population growth and regulation, demography, community ecology, ecosystem dynamics, and human ecology.

61. *Introduction to Human Anatomy.* I. 4 hr. PR: Biol. 1, 3 and 2, 4 or equiv. An introduction to the study of human anatomy. The emphasis is on anatomy but the relationship of structure to function is an essential part of the course.

62. *Human Anatomy Laboratory.* I. 1 hr. Concurrent enrollment in Biol. 61. Study of prosections and skeletal parts and dissection of selected systems.

105. *Undergraduate Research.* I, II. 1-4 hr. PR: Written consent of chair and a 2.7 grad-point average in Biology courses. Individual laboratory or field experiments supervised by a faculty member.

107. *Honors Investigation and Thesis.* I, II, S. 1-4 hr. (May be repeated for credit; max. credit 12 hr.) PR: Second semester of junior year, recommendation of adviser, biology majors only; permission required. Supervised readings, investigation, and study.

109. *Topics and Problems in Biology.* I, II, S. 1-4 hr. (May be repeated for a max. of 6 hr.) PR: Permission required. Topics and problems in contemporary biology. All topics and problems must be selected in consultation with the instructor.

151. *Plant Systematics.* II. 4 hr. PR: Biol. 1, 3 and 2, 4 or equiv. Classification, ecology, and identifications of local vascular plants.

152. *The Plant Kingdom.* I. 4 hr. PR: Biol. 1, 3 and 2, 4 or equiv. Study of the evolution, structure, and development of plants beginning with simple plants and proceeding through various levels of complexity to the flowering plants. (Offered in odd years.)

166. *Human Physiology.* I, II. 3 hr. PR: Biol. 1, 3 and 2, 4 or consent. (Intended for non-Biology majors.) An introductory course in the function of the human.

169. *Plant Physiology.* II. 3 hr. PR: Biol. 1 and 3, Chem. 15 and 16, or consent. Physiochemical processes of plants.

194. *Professional Field Experience.* I, II, S. 1-6 hr. PR: Permission required. Experience in the practical application of knowledge and skills appropriate to a degree in biology.

201. *History of Biology.* I. 3 hr. PR: Biol. 1, 3 and 2, 4 or equiv. History of development of biological knowledge, with philosophical and social backgrounds.

209. *Topics and Problems in Biology.* I, II, S. 1-4 hr. (May be repeated for a max. of 6 hr.) PR: Permission required. Topics and problems in contemporary biology. All topics or problems must be selected in consultation with the instructor.

211. *Advanced Cellular/Molecular Biology.* II. 3 hr. PR: Biol. 19 or consent. Advanced study of fundamental cellular activities and their underlying molecular processes.

212. *Advanced Cellular/Molecular Biology—Laboratory.* II. 1 hr. PR or Conc. Biol. 211 or consent. Experimental approaches to the study of cellular systems. (1 hr. lab.)

213. *Introduction to Virology.* 3 hr. PR: Biol. 19 or consent. Survey of viruses; their modes of replication; contributions made to molecular biology, significance of viral diseases in agriculture and medicine, and contemporary use of viruses in biotechnology. 3 hr. Lec.

214. *Molecular Basis of Cellular Growth.* I. 3 hr. PR: Biol. 19 or consent. Study of the integration of molecular events as they regulate the growth and division of cells. Topics include: hormones as cell effectors, control of gene expression, and the cancer cell as a model system.

216. *Cell and Molecular Biology Methods.* I. 3 hr. PR: Biol. 19 or consent. Introduction to the theory and application of basic analytical tools used in molecular biology. Selected topics included are: hydrodynamic methods, chromatography, electrophoresis, and general laboratory methods. (Offered in even years.)

219. *Introduction to Recombinant DNA Technology. I.* 4 hr. PR: Biol. 19 or consent. An introductory course covering the basic principles and techniques of recombinant DNA technology. Includes molecular cloning, isolation of plasmid DNA, agarose/acrylamide gel electrophoresis, restriction enzyme mapping, nucleic acid hybridization, and DNA sequencing.

231. *Animal Behavior.* I. 4 hr. PR: Biol. 1, 3 and 2, 4 or 15 or Psych. 1 or consent. Introduction to animal behavior (ethology) emphasizing the biological bases and evolution of individual and social behaviors; laboratory includes independent investigation of behavioral phenomena.

232. *Physiological Psychology.* I. 3 hr. PR: 9 hr. psychology, behavior, physiology, or graduate standing. Introduction to physiological mechanisms and the neural basis of behavior. (Also listed as Psych. 232.)

233. *Behavioral Ecology.* 3 hr. PR: Biol. 21 or consent. Consideration of the influences of environmental factors on the short and long term regulation, control, and evolution of the behaviors of animals. (Offered in even years.)

234. *Physiology of Animal Behavior.* II. 3 hr. PR: Biol. 231 or consent. Explores the way behavior is controlled in a wide variety of animals so that commonalities and varieties of neural and endocrine mechanisms may be better understood. (Offered in even years.)

235. *Primate Behavior.* II. 3 hr. PR: Biol. 1, 3 and 2, 4 or 15 or consent. Primates as they exist in their natural habitats, as they suggest clues to human behavior and the evolution of behavior. Case studies and comparative primate behavior of prosimians to monkeys, to apes, to human hunters and gatherers. (Also listed as Soc. & A. 257.)

240. *Methods in Ecology and Biogeochemistry.* II. 3 hr. PR: Biol. 21. Introduction to the theory and application of basic analytical tools used in ecology and biogeochemistry. Topics include sampling of terrestrial and aquatic organisms and their environment, and chemical analyses of biological materials. 3 hr. lec. (Offered in odd years.)

242. *Acid Precipitation on Aquatic Ecosystems.* II. 3 hr. PR: Biol. 1, 3 and 2, 4, or equiv. Acid precipitation and its effects on freshwater ecosystems including all biological communities as well as overall effects on system functions and studies to assess the recovery from whole lake treatments.

243. *Plant Ecology.* I. 4 hr. PR: Biol. 1, 3 and 2, 4; or 21 or consent.

246. *Limnology.* I. 4 hr. PR: Biol. 1, 3 and 2, 4; or 21 or consent. Physical, chemical, and biological characteristics of inland waters with an introduction to the principles of biological productivity.

247. *Aquaculture.* 3 hr. PR: Biol. 1, 3 and 2, 4; or 15 or consent. An introduction to the farming and husbandry of freshwater and marine organisms. Overnight field trips are voluntary. (Offered in odd years.)

250. *Aquatic Seed Plants.* I. 3 hr. PR: Biol. 1, 3 and 2, 4; or 21 or consent. Classification, ecology, and economic importance of aquatic seed plants.

251. *Principles of Evolution.* I. 3 hr. PR: Biol. 1, 3 and 2, 4; or 21 or consent. Introduction to the study of evolution.

252. *Flora of West Virginia.* II. 3 hr. PR: Biol. 1, 3 and 2, 4 or consent. Consideration of the native plant life of the state.

253. *Structure of Vascular Plants.* II. 4 hr. PR: Biol. 1, 3 and 2, 4 or 21 or Pl. Sci. 52 or consent. Development and evolution of vegetative and reproductive structures of vascular plants.

254. *Plant Geography.* II. 3 hr. PR: Biol. 1, 3 and 2, 4 or 15 or consent. Study of plant groupings and worldwide distribution of plants.

255. *Invertebrate Zoology.* II. 4 hr. PR: Biol. 1, 3 and 2, 4 or 21. Advanced study of animals without backbones.

257. *Ichthyology.* II. 3 hr. PR: Biol. 1, 3 and 2, 4 or 21 or consent. Internal and external structure of fishes, their systematic and ecological relationships, and their distribution in time and space. (Dissection kit required.)

259. *General Parasitology.* I. 4 hr. PR: Biol. 1, 3 and 2, 4 or 21 or equiv. Introduction to the biology of parasites. (Dissection kit required.) (Also listed as M. Bio. 224.)

260. *Plant Development.* I. 4 hr. PR: Biol. 15, 17, 19, and 21 and organic chemistry or biochemistry, or consent. Experimental studies of plant growth and development.

261. *Comparative Anatomy.* I. 4 hr. PR: Biol. 15, 17, 19, and 21 or consent. A functional and evolutionary study of vertebrate structure. (Dissection kit required.)

262. *Vertebrate Embryology.* II. 4 hr. PR: Biol. 15, 17, 19, and 21 or consent. An experimental and descriptive analysis of vertebrate development.

263. *Vertebrate Microanatomy.* II. 5 hr. PR: Biol. 15, 17, 19, and 21 or consent. Structural and functional approach to the study of tissues and organs of vertebrates.

268. *Physiology of the Endocrines.* I. 3 hr. PR: Biol. 21 or consent. Regulation of the organs of internal secretions and mechanisms of action of the hormones produced.

269. *Physiology of the Endocrines—Laboratory.* I. 1 hr. PR or Conc.: Biol. 268. Experimental techniques used in study of the endocrine system.

270. *General Animal Physiology.* I. 3 hr. PR: Biol. 15, 17, 19, and 21 or consent. In-depth, current treatment of physiological principles which operate at various levels of biological organization in animals of diverse taxonomic relationships. Understanding is developed from background lectures and student analysis in discussion sessions of research literature.

271. *General Animal Physiology—Laboratory.* I. 1 hr. PR or Conc.: Biol. 270. After learning basic techniques, students are provided the opportunity to design, execute, and report upon an independent research project in physiology.

Broadcast News (BN)

117. *Introduction to Broadcasting.* I, II. 3 hr. PR: Journ. 1, 15, or consent. Survey of the broadcasting industry from the perspective of broadcast journalism, including historical development, federal regulation, industry codes, professional responsibilities, broadcasting research, and contemporary developments including cablevision.

185. *Broadcast Journalism.* 3 hr. PR: Journ. 15, 141, BN 117, admission to the school, or consent. Gathering, writing, editing, and presenting news for radio; taping outside and studio; monitoring local and network newscasts; emphasis on writing and producing newscasts. Lec./lab.

186. *Electronic Field Reporting.* 3 hr. PR: BN 185. Preparation and packaging of field reports for television news using ENG videotape technology; methods of topic selection, evaluation, research; visual and script development; ethical and legal considerations.

285. *Special Topics in Broadcast Journalism.* I, II, S. 1-3 hr. PR: BN 186 and consent. Directed investigation of selected topics in broadcast journalism.

287. *Broadcast Journalism* 2. I, II. 3 hr. PR: BN 185, 186. Continuation of Journ. 185. Television news, including electronic news gathering (ENG).

Business Administration (Bus. A.)

No credit is available for Bus.A. courses toward business or economics degrees. Course completion does not allow admission into other business courses without successful passage of equivalency examination and completion of other prebusiness prerequisites. These courses should not be taken by pre-B&E students or any College of Business and Economics major.

110. *Survey of Business Law.* 3 hr. PR: Junior standing. Overview of business law discipline. Topics include laws and the court system, employment and labor law, business forms and capitalization, business competition law and business ethics.

120. *Survey of Management.* 3 hr. PR: Junior standing. Overview of management discipline as a process involving planning, organizing, controlling and directing. An integrated view of management including organizational behavior is emphasized.

130. *Survey of Marketing.* 3 hr. PR: Junior standing. Overview of the marketing discipline. Topics include the management of the product, communication, price, and distribution variables as well as an introduction to buyer behavior and marketing research.

140. *Survey of Finance.* 3 hr. PR: Junior standing. Overview of the finance discipline. Topics include financial statement analysis, risk, capital budgeting, investments, and security markets.

Business Law (B. Law)

Prerequisites for Upper-Division, Undergraduate Business Courses To enroll in any upper-division, undergraduate business course offered by the College, the undergraduate student must have completed the following prerequisite courses: six hours of principles of economics; six hours of principles of accounting; three hours of statistics, Math. 28 or Math. 14; three hours of calculus (Math. 128 or Math. 15); and attained a 2.5 GPA.. In addition, the student must have successfully completed six hours of composition and rhetoric. Exceptions to the above policy must be approved by the chairperson of the department offering the course.

111. *Legal/Ethical Environment of Business.* 3 hr. The nature of law and the judicial system. The relationship of law, ethics, and cultural values to the business enterprise. Substantive law of contracts, sales, and credit transactions and the social and economic consequences of court decisions.

112. *Business Law for Managers.* 3 hr. PR: B. Law 111. Survey of legal principles relevant to operation and management of business organization, including the substantive law of agency and employment, business organizations, credit and bankruptcy.

200. *Special Topics.* 1-4 hr. PR: B. Law 112 or consent. Special topics relevant to business law. <(Maximum of 9 semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward bachelor's and master's degrees.)

211. *Personnel Relations and the Law.* 3 hr. The legal principles guiding employer-employee relations, including agency law and the law regulating employee health, safety, compensation and benefits, job opportunity, and labor organizing.

213. *Law for the C.P.A.* 3 hr. PR: B. Law 111. A survey of those areas of commercial and regulatory law with which accountants need familiarity in order to exercise good judgment, practice their profession skillfully and understand their professional responsibility. (Credit cannot be received for both B. Law 112 and B. Law 213.)

Chemical Engineering (Ch.E.)

38. *Numerical Methods for Chemical Engineering.* 3 hr. PR: Engr. 2, Math. 17; Coreq.: Ch.E. 41, Math. 18. Numerical solution of algebraic and differential equations with emphasis on process material and energy balances. Statistical methods, optimization, and numerical analysis. 4 hr. lec.

40. *Material and Energy Balances 1.* 3 hr. PR: Math. 15, Chem. 16. Coreq: Engr. 2. Introduction to chemical engineering fundamentals and calculation procedures, industrial stoichiometry, real gases and vapor-liquid equilibrium, heat capacities and enthalpies; material balances and energy balances. 2 hr. lec., 2 hr. calc. lab.

41. *Material and Energy Balances 2.* 3 hr. PR: Ch. E. 40. Coreq.: Ch.E. 38. Continuation of Ch.E. 40. 2 hr. lec., 2 hr. calc. lab.

105. *Engineering Materials Science.* 3 hr. PR: Phys. 12. Includes a study of the internal structures of metals, ceramics, and organic materials, and the dependence of properties upon these structures. Also, the behavior of materials under conditions involving mechanical stresses, thermal reactions, corrosion, electromagnetic fields, and radiation. 3 hr. lec.

110.*Single and Multi-Phase Fluid Flow.* 3 hr. PR: Math. 17, Ch.E. 41. Fluid statics, laminar and turbulent flow phenomena, fluid friction and flow in pipes, pumps, metering and transportation of fluids, single and multiple phase flow through packed beds, settling and filtration. Laboratory demonstrations and experiments. 2 hr. lec., 2 hr. lab.

111. *Process Heat Transfer.* 3 hr. PR: Math. 17, Ch.E. 41. Conductive heat transfer, convective heat transfer, design and selection of heat exchange equipment, evaporation, and radiation. Applications, laboratory demonstrations, and experiments. 2 hr. lec., 2 hr. lab.

112. *Separation Processes.* 4 hr. PR: Ch.E. 110, 111, 142. Equilibrium stage- multiple stage operations, differential counter current contacting, air-water contact operations, drying, selection of separation processes. Laboratory demonstrations and experiments. 3 hr. lec., 2 hr. lab.

142. *Chemical Engineering Thermodynamics.* 4 hr. PR: Ch.E. 41, Math. 17. First and second laws of thermodynamics. Thermodynamic functions for real materials. Physical and chemical equilibrium concepts and applications. 3 hr. lec., 2 hr. Calc. lab.

145. *Chemical Engineering Transport Analysis.* 3 hr. PR: Ch.E. 38, 110, 142, Math. 18. Development of fundamental relationships for momentum, heat and mass transfer for flow systems to include chemical reactions, interphase transport, and transient phenomena. Development and use of microscopic and macroscopic balance equations. 3 hr. lec.

172. *Chemical Reaction Engineering.* 3 hr. Coreq.: Ch.E. 145. Application of material balances, energy balances, chemical equilibrium relations, and chemical kinetic expressions to the design of chemical reactors. 3 hr. lec.

175. *Chemical Process Simulation.* 3 hr. PR: Ch.E. 112, 145 and 172. Transient behavior of chemical process flow systems, linearization and stability. Process control system design including frequency response analysis. Analog simulation of process dynamics. 3 hr. lec.

180. *Unit Operations Laboratory 1.* 1 hr. per sem. Coreq.: Ch.E. 182. Operation of chemical process engineering equipment; collection, analysis, and evaluation of data; laboratory report preparation. 4 hr. lab.

181. *Unit Operations Laboratory 2.* 1 hr. per sem. PR: Ch.E. 180. Coreq.: Ch.E. 183. Continuation of Ch.E. 180. 4 hr. lab.

182. *Chemical Process Design.* I. 4 hr. PR: Ch.E. 112, 145, 172. Analysis, synthes is, and design of chemical process systems. Professional aspects of the practice of chemical engineering. Includes a group chemical plant design project, as well as individual design projects. 4 hr. lec.

183. *Chemical Process Design.* II. 4 hr. PR: Ch.E. 182. Cont. of Ch.E. 182. 4 hr. lec.

197. *Thesis.* 2-5 hr. Open only to qualified seniors. A problem in chemical engineering or industrial chemistry is selected for investigation. A carefully prepared report is required. 6-15 hr. lab.

212. *Biochemical Separations.* 3 hr. PR: Ch.E. 112 or consent. Modeling and design of separation processes applicable to recovery of biological products. Topics include filtration, centrifugation, extraction, adsorption, chromatography, electrophoresis, membranes, crystallization, examples from industry. 3 hr. lec.

224. *Process Development.* 3 hr. PR: Chem. 134, 144; Ch.E. 111, 145 or consent. Coal conversion process systems from the modified unit operations- unit process concept. Thermodynamics and kinetics in evaluation of system requirements and performance. 3 hr. lec.

258. *Polymers and Polymer Processing.* 3 hr. PR: Chem. 134, CH.E. 110. Polymers and their handling. Properties of macromolecules as influenced by molecular weight, polymerization methods, plastics technology, polymer engineering, polymerization kinetics, polymer characterization, commercial production processes, injection molding processes, blow molding and composites. 3 hr. lec.

265. *Interfacial Phenomena.* 3 hr. PR: Ch.E. 145, Chem. 246 or consent. Processes occurring at fluid/fluid and fluid/solid interfaces. Interfacial tension, contact angle, wetting, transport phenomena near interfaces, properties and stability of colloids, colloid transport phenomena, surfactants, micelles and emulsions. 3 hr. lec.

272. *Biochemical Engineering.* PR: Ch.E. 172 or consent. Kinetics of enzymatic and microbial reactions, interactions between biochemical reactions and transport phenomena, analysis and design of bioreactors, enzyme technology, cell cultures, bioprocess engineering. 3 hr. lec.

280. *Chemical Engineering Problems.* 1-6 hr. For juniors, seniors, and graduate students. May be used to correct deficiencies before or following courses such as Ch.E. 180 and 183, or for other students desiring to take only a portion of a course.

290. *Introduction to Nuclear Engineering.* 3 hr. PR: Junior standing. Introduction to fundamental principles and applications of nuclear technology in science and engineering fields. Studies of nuclear fission and the design and operation of nuclear reactor systems; uses of radioisotopes as power sources and in materials processing, testing and medicine; health physics and radiation detection and shielding. 3 hr. lec.

Chemistry (Chem.)

Note: A charge is made for breakage and supplies in laboratory courses and for failure to check out of the laboratory.

10. *Introduction to Chemistry.* I, II. 2 hr. PR: Math. 3 (or higher) or concurrent enrollment or Math. 3 (or higher) placement on Math Placement Exam. Required for students whose performance on a departmental examination indicates need for introductory work before enrolling in other chemistry courses. Scientific terminology and concepts; chemical arithmetic; chemical symbols, formulae and equations; mole concepts; problem solving. May not count for credit toward graduation if taken after credit for another course in chemistry has been established. 1 hr. lec., 1 hr. rec.

11. *Survey of Chemistry.* I. 4 hr. PR: Satisfactory performance on departmental examination, or Chem. 10. Designed primarily for students taking only one year of college chemistry. Atomic structure; chemical bonding; acids, bases, and salts; periodicity; properties of gases, liquids, and solids; stoichiometry; oxidation-reduction. 3 hr. lec., 3 hr. lab. (Students may not receive credit for Chem. 15 or 17 and for Chem. 11.)

12. *Survey of Chemistry.* II. 4 hr. PR: Chem. 11. Continuation of Chem. 11. Nuclear chemistry; air and water pollution; useful natural materials; consumer chemistry; introduction to organic and biochemistry. 3 hr. lec., 3 hr. lab. (Students may not receive credit for Chem. 16 or 18 and for Chem. 12.)

15. *Fundamentals of Chemistry.* I, II. 4 hr. PR: Chem. 10 or satisfactory performance on departmental examination.. For students who need more than one year of college chemistry and quantitative relationships on which subsequent chemistry courses are built. 2 hr. lec., 1 hr. rec., 3 hr. lab. (Students may not receive credit for Chem. 17 and for Chem. 15.)

16. *Fundamentals of Chemistry.* I, II. 4 hr. PR: A grade of C or better in Chem. 15. Cont. of Chem. 15. 2 hr. lec., 1 hr. rec., 3 hr. lab. (Students may not receive credit for Chem. 18 and for Chem. 12 or 16.)

17. *Principles of Chemistry.* I. 5 hr. PR: High school chemistry and satisfactory performance on departmental examination, or Chem. 10. A more advanced treatment of the principles and theories of chemistry than offered in Chem. 15 and 16. Primarily for students specializing in chemistry. 3 hr. lec., two 3-hr. lab. (Students may not receive credit for Chem. 17 and for Chem. 11 or 15.)

18. *Principles of Chemistry.* II. 5 hr. PR: A grade of C or better in Chem. 17. Cont. of Chem. 17. 3 hr. lec., two 3-hr. lab. (Students may not receive credit for Chem. 18 and for Chem. 12, 16, or 115.)

115.*Introductory Analytical Chemistry.* I. 4 hr. PR: A grade of C or better in Chem. 16. Volumetric analysis, gravimetric analysis, solution equilibria, spectrophotometry, separations, and electrochemical methods of analysis. 2 hr. lec., two 3 hr. lab. (Students may not receive credit for Chem. 115 and for Chem. 17 and 18.)

131.*Organic Chemistry: Brief Course.* II. 4 hr. PR: Chem. 16. Emphasis on biological applications for students in medical technology, agriculture, and family resources. Nomenclature, structure, reactivity, and stereochemistry are stressed. 3 hr. lec., 3 hr. lab. (Students may not receive credit for Chem. 131 and for Chem. 133 and 134.)

133. *Organic Chemistry.* I, II. 3 hr. PR: A grade of C or better in Chem. 16 or 18; Chem. 135 or concurrent enrollment. Basic principles of organic chemistry. Modern structural concepts, the effect of structure on physical and chemical properties, reactions and their mechanisms and application to syntheses. 3 hr. lec. (Students may not receive credit for Chem. 133, 134, and for Chem. 131.)

134. *Organic Chemistry.* I, II. 3 hr. PR: A grade of C or better in Chem. 133; Chem. 135, and 136 or concurrent enrollment in Chem. 136. Cont. of Chem. 133. 3 hr. lec.

135.*Organic Chemistry Laboratory.* I, II. 1 hr. PR or Conc.: Chem. 133. Fundamental organic reactions and the preparation of organic compounds. 3 hr. lab.

136. *Organic Chemistry Laboratory.* I, II. 1 hr. PR: Chem. 133, 135 and 134, or concurrent enrollment in Chem. 134. Continuation of Chem. 135. 3 hr. lab.

141. *Physical Chemistry: Brief Course.* II. 3 hr. PR: A grade of C or better in Chem. 16 (Chem. 115 if chem. major.) Math. 16, and Phys. 2 or 12. Beginning physical chemistry covering the subjects of chemical thermodynamics, chemical dynamics, and the structure of matter. 3 hr. lec. (Students may not receive credit for Chem. 246 and 248 and for Chem. 141.)

142. *Experimental Physical Chemistry.* I, II. 1 hr. PR or Conc: Chem. 141 or 246; Chem. 115, or Chem. 131, or Chem. 135. Laboratory work in physical chemistry designed to accompany Chem. 141. One 3-hr. lab.

192. *Undergraduate Research.* I, II. 1-3 hr. (May be repeated for credit.) PR: Written consent and a 3.0 grade-point average in chemistry courses. Individual investigations under supervision of an instructor. 3-9 hr. lab.

194. *Honors Course.* I, II. 1-3 hr. (May be repeated for credit.) PR: Written consent and at least a 3.5 average in chemistry courses taken in the department. Research for students in the departmental honors program. Thesis required.

201. *Chemical Literature.* I. 1 hr. PR: Chem. 134; Chem. 141 or 246. Study of techniques of locating, utilizing, and compiling information needed by research workers in chemistry. 1 hr. lec.

202. *Selected Topics.* I, II. 1-3 hr. (May be repeated for credit.) PR: Written consent, with at least a 2.0 grade-point average in chemistry courses. Individual instruction under supervision of an instructor.

203. *Undergraduate Seminar.* II. 1 hr. PR: Chem. 201. For B.S. chemistry majors, B.A. chemistry majors by consent. Instruction in design and presentation of topics of current chemical interest. 1 hr. individual instruction and/or lecture.

210. *Instrumental Analysis.* 3 hr. PR: Chem. 115 and physical chemistry (Chem 141 or 246 and at least coregistered in Chem. 248) with grades of C or better. Basic electronics, electrochemistry, spectroscopy, mass spectrometry, and chromatography.

211. *Intermediate Analytical Chemistry.* I. 3 hr. PR: Chem. 115 and physical chemistry. Principles of analytical procedures and separations at an intermediate level. 3 hr. lec.

212. *Environmental Chemistry.* II. 3 hr. PR: Chem. 115, 134, and physical chemistry. Study of the nature, reactions, transport, and fates of chemical species in the environment.

213. *Instrumental Analysis Laboratory.* I. 1 hr. PR: Chem. 210. Experiments using modern chemical instrumentation. 3-hr. lab.

214. *Computer Interfacing Laboratory.* I. 1 hr. PR: Chem. 210; Conc.: Chem. 213. Computer interfacing of chemical instruments.

222. *Chemistry of Inorganic Compounds.* I. 3 hr. PR: Physical chemistry. Correlation of reactions and properties of elements and compounds based on modern theories of chemical bonding and structure. Acid-base theory, non- aqueous solvents, ligand field theory, and stereochemistry. 3 hr. lec.

223. *Inorganic Synthesis Laboratory.* 2 hr. PR: Chem. 222. Application of modern synthetic and spectrochemical methods of analysis to the preparation and characterization of transition-metal and main-group compounds.

235. *Methods of Structure Determination.* I. 4 hr. PR: Chem. 134 and 136. Use of chemical methods and uv, ir, nmr, esr, Raman and mass spectroscopy to elucidate structures of organic compounds. For students in chemistry and related fields who may need these methods in research and applied science. 2 hr. lec., two 3-hr. lab.

237. *Polymer Chemistry.* I. 3 hr. PR: Chem. 134 and physical chemistry. Methods, mechanisms, and underlying theory of polymerization. Structure and stereochemistry of polymers in relation to chemical, physical, and mechanical properties. 3 hr. lec.

239. *Organic Syntheses.* II. 3 hr. PR: Chem. 134, 136. Modern synthetic methods of organic chemistry. One 1-hr. lec., two 3-hr. lab.

241. *Crystallography.* II. 3 hr. PR or Conc.: Physical chemistry or consent. Applications of X-ray diffraction of crystals to study of crystal and molecular structure. Includes theories of diffraction and crystallographic methods of analysis. 3 hr. lec.

243. *Introduction to Radiochemistry and Radiation Chemistry.* I. 3 hr. PR or Conc.: Physical chemistry. Fundamentals of radiochemistry and the use of tracer techniques. An introduction to radiation chemistry and how ionizing radiation interacts with matter. 2 hr. lec., 3 hr. lab.

244. *Colloid and Surface Chemistry.* II. 3 hr. PR: Physical chemistry. Selected topics in the properties and physical chemistry of systems involving macromolecules, lyophobic colloids, and surfaces. 3 hr. lec.

246. *Physical Chemistry.* I. 3 hr. PR: Chem. 134, Math. 16, and Phys. 12.First course in physical chemistry. Topics include a study of thermodynamics and chemical equi - libria. 3 hr. lec. (Students may not receive credit for Chem. 246 and for Chem. 141.)

247. *Physical Chemistry Laboratory.* II. 1 hr. PR: Chem. 18 or 115 and Chem. 246. Experimentation illustrating the principles of physical chemistry and offering experience with chemical instrumentation. One 3-hr. lab.

248. *Physical Chemistry.* II. 3 hr. PR: Chem. 246 and Math. 17. Continuation of Chem. 246. Chemical dynamics and the structure of matter. 3 hr. lec. (Students may not receive credit for Chem. 248 and for Chem. 141.)

249. *Physical Chemistry Laboratory.* I. 2 hr. PR: Chem. 246, 247, 248. Continuation of Chem. 247. Two 3-hr. lab.

250. *Chemical Bonding and Molecular Structure.* I. 3 hr. PR: Chem. 248. Introduction to the quantum theory of chemical bonding. Atomic structure, theoretical spectroscopy, predictions of molecular structures and bond properties. 3 hr. lec.

Child Development and Family Studies (CD&FS)

10. *Introduction to Child Development.* I, II. 3 hr. Introduction of the major explanations (i.e., theories) and concepts in the study of child development which will be integrated in an analysis of children's physical, cognitive, and social development.

12. *Introduction to Marriage and the Family.* I,II. 3 hr. Study of dating patterns, mate selection, premarital relationships, and early marital adjustment. Focus on problem solving and communication between partners.

110. *Introduction to Parenting.* I. 3 hr. Introduction of terminology, descriptions, and explanations of the parental role and parent-child interactions. Emphasis on social and personal definitions of the parental role and on the problems and changes in parent-child relationships.

111. *Infant Development.* II. 3 hr. PR: CD&FS 10. Developmental characteristics and environmental effects on the child during the prenatal period and the first two years with implications for guidance and care.

112. *Early Childhood Development.* II. 3 hr. Physical, social, emotional, and cognitive development of children from conception to 7 years with implications for guidance and care in practical settings.

194. *Child Development Professional Field Experience.* I,II. 1-4 hr. PR: CD&FS 10 or 112, or Psych. 141 and consent. A supervised field placement at the West Virginia

University Child Development Laboratory where students will gain experience with preschoolers (ages 3-5 years.) 1-4 hr. internship.

212. *Adolescent Development.* I. 3 hr. PR: CD&FS 10. Adolescent in contemporary American culture, including normative physical, social, and personality development; relationships within various typical social settings. (e.g., family, school, community, peer group). (Offered in spring of even years.)

213. *Contemporary Issues in Family Relations.*. II. 3 hr. Study of recent research findings in the major areas of family relationships. Topics include effects of divorce upon children, impact of employment upon the marital relationship, and spousal violence.

215. *Parenting Strategies.* II. 3 hr. PR: Senior or graduate standing or consent. Focus on the interactions between parent and child. Analysis of typical problems which occur in parenting. Deals solely with normal daily situations which often occur in the home.

216. *Child Development Practicum.* 3-4 hr. PR: CD&FS 112 or Psych. 141 or consent. Developmental principles and their application to 3- and 4-year-old children at the University Child Development Center. Assignments involve planning developmentally appropriate activities.

219. *The Growing Years.* II. 3 hr. A televised course offered primarily for off-campus students to become familiar with development of children during their growing years. How to recognize the diversity of approaches in child development research and theory.

Chinese (Chin.)

1 *Elementary Chinese.* I. 3 hr.

2. *Elementary Chinese.* II. 3 hr. Continuation of Chin. 1.

3. *Intermediate Chinese.* I. 3 hr. PR: Chin. 1, 2 or equiv.

4. *Intermediate Chinese.* II. 3 hr. PR: Chin. 3 or equiv.

191. *Special Topics.* I, II. 1-4 hr.* PR: Consent.

Civil Engineering (CE)

1.* *Surveying.* 2 hr. PR: Math. 4. Elementary theory and practice of the measurement of distance, angles, and difference in elevation. Office computation and plotting. 1 hr. lec., 3 hr. lab.

5.* *Land Surveying.* 4 hr. PR: Math. 4. Theory and practice with compass, transit, level, and stadia. Computations of area, earthwork volumes, and horizontal and vertical curves; astronomical observations; boundary surveying; and map plotting. 2 hr. lec., 6 hr. lab.

101. *Survey Engineering.* 4 hr. PR: Sophomore standing. Theory of measurements and errors, traverse computations, meridian determination, state plane coordinates, horizontal and vertical curves, easement curves, earthwork volumes, topographic mapping, construction surveying, and boundary surveying. 3 hr. lec., 3 hr. lab.

110. *Civil Engineering Materials.* 4 hr. PR: M.A.E. 43 or consent. Physical, chemical, and molecular properties of materials commonly employed in civil engineering works. Influence of these properties on the performance and use of materials. Emphasis on laboratory evaluation of properties that control the performance of materials. 3 hr. lec., 3 hr. lab.

*May be taken as undergraduate work by students in other colleges and schools.

120. *Fluid Mechanics and Hydraulics.* 4 hr. PR: Math. 18, M.A.E. 42. Fluid statics, kinematics and dynamics of fluid flow, flow measurements, flow in pressure conduits and open channels, similitude and dimensional analysis, and applications of turbomachines. 3 hr. lec., 3 hr. lab.

132. *Introduction to Transportation Engineering.* 4 hr. PR: C.E. 101. Integrated transportation systems from the standpoint of assembly, haul, and distribution means. Analysis of transport equipment and traveled way. Power requirements, speed, stopping, capacity, economics, route location. Future technological developments and innovations. 3 hr. lec., 3 hr. lab.

146. *Sanitary Engineering* 1. 3 hr. PR: C.E. 120. Population prediction and hydrology as applied to the design of water storage reservoirs and the design of water distribution, wastewater, and stormwater collection systems. 2 hr. lec., 3 hr. lab.

147. *Sanitary Engineering 2.* 3 hr. PR: Junior standing. Examination of water and wastewater, analysis and design of water and wastewater treatment systems including treatment and disposal of residuals. 2 hr. lec., 3 hr. lab.

160. *Structural Analysis 1.* 3 hr. PR: M.A.E. 43 or consent. Stability and determinacy of structures; shear and bending moment diagrams of determinate beams and frames; analysis of trusses; determination of displacements of planar structures by geometric and energy methods. 3 hr. lec.

181. *Introductory Soil Mechanics.* 3 hr. PR: C.E. 110. Introduction to geotechnical engineering, origin and formation of soils, fundamental soil properties, classification of soils, soil compaction, soil water and seepage, stresses in soils, compressibility and consolidation, shear strength, lateral earth pressures. 2 hr. lec., 3 hr. lab.

195. *Seminar.* (Credit.) PR: Junior or senior standing. Lectures by noted engineering and engineering-related practitioners and educators. Discussion of matters of mutual concern to students and faculty.

196. *Professional Development.* 1 hr. PR: Junior standing. The presentation of selected seminars, minicourses, and workshops on topics related to the planning, design, construction, and management of civil engineering systems.

201. *Principles of Boundary Surveying.* 3 hr. PR: C.E. 101 or consent. A study of the retracement requirements for metes and bounds survey systems. The study will include interpretation and writing of the property descriptions, legal principles related to boundary establishment, and analytical approaches to boundary location. 3 hr. lec.

208. *Control Surveying.* 3 hr. PR: C.E. 101. A study of the measurement and computational techniques used to locate precisely positions on the surface of the earth. 2 hr. lec., 1 hr. lab.

212. *Concrete and Aggregates.* 3 hr. PR: C.E. 110 or consent. Considerations and methods for the design of concrete mixes. Properties of portland cement and aggregates and their influence on the design and performance of concrete mixtures. Testing of concrete and aggregate and the significance of these tests. 2 hr. lec., 3 hr. lab.

213. *Construction Methods.* 3 hr. PR: Junior or senior standing in civil engineering. Study of construction methods, equipment, and administration with particular emphasis on the influence of new developments in technology. 3 hr. lec.

220. *Computational Fluid Mechanics.* 3 hr. PR: C.E. 120, Engr. 2, or consent. Use of the computer in elementary hydraulics, open channel flow, potential flow, and boundary layer flow, numerical techniques for solution of algebraic equations, ordinary differential equations, and partial differential equations. 3 hr. lec.

231. *Highway Engineering.* 3 hr. PR: C.E. 132, 181. Highway administration, economics and finance; planning and design; subgrade soils and drainage; construction and maintenance. Design of a highway. Center-line and grade-line projections, earthwork and cost estimate. 2 hr. lec., 3 hr. lab.

233. *Urban Transportation Planning and Design.* 3 hr. PR: C.E. 132 or consent. Principles of planning and physical design of transportation systems for different parts of the urban area. Land use, social, economic, and environmental compatibilities are emphasized. Evaluation and impact assessment.

235. *Railway Engineering.* 3 hr. PR: C.E. 101. Development and importance of the railroad industry. Location, construction, operation, and maintenance. 3 hr. lec.

240. *Applied Hydrology.* 3 hr. PR: Consent. The hydrologic cycle with emphasis on precipitation and runofff as related to design of hydraulic structures, soil and water conservation, and flood control. 3 hr. lec.

245. *Properties of Air Pollutants.* 3 hr. PR: Consent. Physical, chemical, and biological behavioral properties of dusts, droplets, and gases in the atmosphere. Air pollu - tant sampling and analysis. Planning and operating air pollution surveys. 2 hr. lec., 3 hr. lab.

251. *Public Health Engineering.* 3 hr. PR: Consent. Engineering aspects involved in control of the environment for protection of health and promotion of comfort of humans. Communicable disease control, milk and food sanitation, air pollution, refuse disposal, industrial hygiene, and radiological health hazards. 3 hr. lec.

252. *Water Resources Engineering.* 3 hr. PR: C.E. 146. Application of hydrologic and hydraulic principles in the design and analysis of water resources systems. Topics include hydraulic structures, economics and water law irrigation, hydroelectric power, navigation, flood-drainage litigation, and water-resources planning. 3 hr. lec.

260. *Structural Analysis 2.* 3 hr. PR: C.E. 160. Fundamental theory of statically indeterminate structures. Analysis of indeterminate beams, frames, and trusses by stiffness and flexibility methods; computer aided structural analysis by standard computer codes; study of influence lines for beams, frames, and trusses. 3 hr. lec.

270. *Reinforced Concrete Design.* 3 hr. PR: C.E. 110, 160; PR or Conc.: C.E. 260. Behavior and design of reinforced concrete members. Material properties; design methods and safety considerations; flexure; shear; bond and anchorage; combined flexure and axial load; footings; introduction to torsion, slender columns, and pre-stressed concrete. 2 hr. lec., 3 hr. lab.

271. *Steel Design.* 3 hr. PR: C.E. 110, 160; PR or Conc.: C.E. 260. Design of steel bridge and building systems with emphasis on connections, beams, columns, plastic design, and cost estimates. 3 hr. lec.

274. *Timber Design.* 3 hr. PR: C.E. 110, 160; PR or Conc.: C.E. 260. Fundamentals of modern timber design and analysis. Topics include wood properties, design of beams, columns, trusses, and pole structures using dimension lumber, glue-laminated products, and plywood. 3 hr. lec.

281. *Foundations Engineering.* 3 hr. PR: C.E. 181. The practice of geotechnical engineering, subsurface explorations, geotechnical analysis and design of shallow and deep foundations, retaining structures, stability of earth slopes, soil and site improvement. 3 hr. lec.

283. *Earthwork Design.* 3 hr. PR: C.E. 181. Use of soil mechanics principles in the analysis, design, and construction of earth structures. Principles of compaction and compaction control; an introduction to slope stability analysis and landslides; earth reinforcement systems, and ground improvement techniques. 3 hr. lec.

290. *Civil Engineering Problems.* 1-6 hr. PR: Junior or senior standing. Special topics in various aspects of civil engineering analysis, design, and construction.

291. *Comprehensive Project for Civil Engineering.* 3 hr. PR: Senior standing in civil engineering. Application of civil engineering principles, through group studies, to develop a solution for a comprehensive engineering problem. Consideration given to a problem involving all aspects of civil engineering. 1 hr. lec., 6 hr. lab.

293. *Basic Finite Element Methods.* 3 hr. PR: Senior standing or consent. Simplified treatment of theoretical basis of finite element method, background theory, formulation and applications: stress analysis in axial columns, one- dimensional heat and fluid flow, consolidation, beam-column analysis, mass transportation and overland flow.

296. *Civil Engineering Studies.* 1-3 hr. (Only 3 hr. credit may be applied toward the B.S.C.E. degree.) PR: Consent. Supervised internships and field experience in civil engineering analysis, design, and construction.

Classics (Class.)

1. *Elementary Latin.* I. 3 hr.

2. *Elementary Latin.* II. 3 hr.

3. *Intermediate Latin.* I. 3 hr. PR: Class. 1 and 2, or two years of high school Latin.

4. *Cicero's Orations.* II. 3 hr. PR: Class. 3, or two years of high school Latin.

11. *Elementary Greek.* I. 3 hr.

12. *Elementary Greek.* II. 3 hr.

13. *Intermediate Greek.* I. 3 hr. PR: Class. 12.

14. *Intermediate Greek.* II. 3 hr. PR: Class. 13.

101. *Greek and Roman Civilization and Culture.* I. 3 hr.

102. *Greek and Roman Myths.* II. 3 hr.

109. *Selections from Roman Prose.* I. 3 hr. PR: Class. 3 and 4 or consent.

110. *Selections from Roman Poetry.* II. 3 hr. PR: Class. 4 and 109 or consent.

113. *Roman Biographers.* I. 3 hr. PR: Class. 3 and 4 or consent.

165. *Roman Public and Private Life.* II. 3 hr.

195. *Field Experience.* I, II, S. 1-18 hr.* PR: Consent.

201. *Roman Novelists.* I. (Alternate Years.) 3 hr. PR: Class. 109, 110, or consent.

202. *Roman Comedy.* II. (Alternate Years.) 3 hr. PR: Class. 109, 110, or consent.

235. *Roman Epic.* I. 3 hr. PR: Class. 109, 110, or equiv.

292. *Pro-Seminar in Latin or Greek Literature.* 1-6 hr.* PR: Consent. Special topics.

Communication Studies (Comm.)

11. *Principles of Human Communication.* I, II, S. 1 hr. Introduction to the human communication process with emphasis on the principles, variables, and social contexts of communication.

12. *Human Communication in the Interpersonal Context.* I, II, S. 2 hr. PR or Conc.: Comm. 11. Introduction to interpersonal communication with emphasis upon application of one-to-one communication in a variety of social contexts.

13. *Human Communication in the Small Group.* I, II, S. 2 hr. PR or Conc.: Comm. 11. Introduction to small-group communication with emphasis upon application in a variety of social contexts.

14. *Human Communication in the Public Communication Context.* I, II, S. 2 hr. PR or Conc.: Comm. 11. Introduction to principles of communication in the one-to-many context.

21. *Human Communication in a Contemporary Society.* I, II, S. 3 hr. Introduction to principles of communication and decision making in significant issues in a free society. Emphasis on topics such as freedom of speech and press.

80. *Introduction to the Mass Media.* I, II. 3 hr. Critical examination of mass media with special emphasis on ways in which social, economic, and psychological factors influence the structure, functions, and efforts of the media.

105. *Special Topics in Human Communication.* I, II. 3 hr. (Repeatable to 6 hr. total.) PR: Comm. 11. Topics include communication and conflict resolution, role of communication in negotiation and bargaining, contemporary communication criticism, issues in communication fields, etc.

106. *Nonverbal Communication.* I, II. 3 hr. PR: Comm. 11. An examination of the effects of human nonverbal behavior on human communication. Emphasis on specific nonverbal behaviors including touch, time, environmental contexts, physical appearance cues, and social communication cues.

107. *Human Communication and Rational Decisions.* I. 3 hr. Argumentation, small group, persuasion, and systems theories application to the process and outcome of rational decision making in communication. Some emphasis on critical-rational response to manipulative communication.

108. *Nonviolence in Communication Behavior.* I. 3 hr. Nonviolent resistance as communication behavior. Emphasis on major proponents of and upon learning ways to apply nonviolence in communication behavior.

109. *Human Communication in Organizations and Institutions.* I, II. 3 hr. PR: Comm. 11. Communication processes and problems in business and nonbusiness organizations and institutions with attention to practical application.

110. *Advanced Organizational Communication.* 3 hr. PR: Comm. 109. Communication in superior/subordinate and peer relationships; emphasis on application of communication theory to complex organizations and organizational contexts.

111. *Organizational Communication and Change.* I, II. 3 hr. Focuses on communication competencies needed for survival in organizations. Emphasis on communication of change, diffusion of innovations, communication flow, formal/informal communication roles, management communication styles, power, conflict, status, and effective supervisory/subordinate communication.

113. *Business and Professional Communication.* I, II. 3 hr. PR: Comm. 109, 110. Application of the theories of effective communication in organizations. Simulated projects and oral presentations will be used to refine communication skills necessary for entry-level positions within business and industry.

131. *Human Communication and Language Behavior.* I, II. 3 hr. Introduction to the production and use of language with emphasis on linguistic, psychological, sociological, and developmental perspectives on language in human communication.

133. *Interpersonal Communication.* I, II. 3 hr. PR: Comm. 11. Survey of theoretical and research literature in interpersonal communication. Emphasis on interaction, interpersonal understanding, personal relationships, and self understanding as outcomes in interpersonal communication.

134. *Gender and Communication.* 3 hr. PR: Comm. 12 or 133, or consent. The similarities and differences of communication variables for males and females. Theoretical implications in the study of the gender variable with practical applications in different contexts.

135. *Intercultural Communication.* 3 hr. PR: Comm. 11 and 12, or 14. Examines similarities and differences between cultures with regard to norms, values, and practices in verbal and nonverbal communication. Emphasis on communication in Latin American, Asian, African, and Middle Eastern cultures.

140. *Communication and Aging.* I, II. 3 hr. Examining the influence of aging on communication, concentrating on persons over age 55. Social, psychological, biological, and sensory communication adjustments. Multidisciplinary approach to aging theories. Direct interaction with an elderly person is required.

160. *Communication Research Methods.* I. 3 hr. PR: Pre-Communication Studies major or consent. Research methods in human communication and related professional areas with emphasis on understanding and evaluating research procedures. Special focus on practical applications.

161. *Directed Studies in Human Communication.* I, II. 3 hr. PR: Comm. 160. (Repeatable to 6 hr. total.) Independent study and research in special areas of human communication.

180. *Effects of Mediated Communication.* I, II. 3 hr. PR: Comm. 11. Messages and characteristics of mass media with emphasis on effects of mass communication on society.

187. *Appreciation of the Motion Picture.* I, II. 3 hr. Evaluation of motion picture and television film as forms of mediated communication and as art forms involving communication and aesthetic principles. Emphasis on the feature-length theatrical fiction film.

190. *Teaching Practicum.* I, II. 1-3 hr. (Repeatable to 6 hr. total.) PR: Consent. Individually supervised experiences in assisting with teaching, tutoring, and/or classroom management projects.

191. *Special Topics in Speech Communication.* I, II, S. 1-3 hr. (Repeatable to 6 hr. total.)

195. *Field Experiences in Human Communication.* I, II, S. 1-3 hr. (Repeatable to 12 hr. total.) PR: Communication Studies major and consent.

201. *Principles of Communication Education.* I, II. 3 hr. PR: 15 hr. communication studies. Literature, principles, and current practices of communication education in public schools with directed application. Intended for teachers in communication and language arts.

206. *Advanced Study in Nonverbal Communication.* I, II. 3 hr. PR: Comm. 106. Functions of nonverbal communication including status, power, immediacy, relationship development, regulation, turn-taking, leakage and deception, intuition, person perception, and emotional expressions.

221. *Persuasion.* I, II. 3 hr. PR: Comm. 11. Theory and research in persuasion, emphasizing a critical understanding and working knowledge of the effects of social communication on attitudes, beliefs, and behavior.

230. *Survey of Rhetorical-Communication Theory. I,* II. 3 hr. PR: Comm. 11. A survey of theory in the rhetorical communication context with emphasis upon periods preceding the twentieth century.

231. *Communication and Symbol Analysis.* I, II. 3 hr. PR: Comm. 131. Advanced study of language in communication. Specific attention to conversational analysis.

Computer Engineering (CpE)

71. *Introduction to Digital Logic Design.* 3 hr. PR: Engr. 2 or consent. An introduction to the design of digital networks and computers. Topics include number systems, coding, Boolean and switching algebra, logic design, minimization of logic, sequential networks, and design of digital subsystems. 3 hr. lec.

72. *Digital Logic Laboratory.* 1 hr. PR: Coreq. CpE 71. Experiments with digital electronic circuits including number systems, design and application of modern digital circuitry for both combinational and sequential logic circuits.

110. *Microprocessor Systems.* 3 hr. PR: CpE 71, 72, EE 56, 57. Theory and design of microprocessors; organization and architecture of modern processors; integration of microprocessors with RAM, ROM, and I/O devices; machine language, assembly language and software development.

111. *Microprocessor Laboratory.* 1 hr. PR: Coreq. Cpe 110. Machine language, assembly language and hardware and software interfacing. (This includes editing, linking, and debugging.) Memory, I/O and basic techniques of microprocessor interfacing.

112. *Microcomputer Structures and Interfacing.* 3 hr. PR: CpE 110, 111, Coreq. CpE 113. Design of computer systems with emphasis on interface hardware including communications, high power interface devices, line driver/receiver circuits, A/D and D/A devices, and utilization of software techniques for programmed, interrupt, and direct memory access.

113. *Microcomputer Structures and Interfacing Laboratory.* 1 hr. PR: CpE 110, 111, Coreq. CpE 112. A microprocessor based single board computer is designed and built. A semester project is required using standard I/O techniques.

180. *Senior Design Seminar.* 2 hr. PR: CpE 110, 111, Engl. 2. Selected topics leading to the selection of a project for CpE 181; writing a proposal expressing the intellectual design effort; includes professional development, legal and ethical aspects of engineering. 1 hr. lec., 1 hr. conf.

181. *Senior Design Project.* 3 hr. PR: CpE 180 and C.S. 140. Design and construction of a computer engineering project. Emphasis on the professional approach of the analysis and solution of an engineering problem.

242. *Introduction to Digital Computer Architecture.* 3 hr. PR: Math 215, CpE 110, 111. Control, data, and demand driven computer architecture; parallel processing, pipelining, and vector processing; structures and algorithms for array processors, systolic architectures, design of architectures.

270. *Digital Systems Design.* 3 hr. PR: Cp.E. 71. Hierarchical design methods, from the machine architecture, through data flow concepts and control flow concepts, to implementation. Topics include: design methodology, design techniques, machine organization, control unit implementation and interface design. 3 hr. lec.

271. *Switching and Automata Theory.* 3 hr. PR: CpE 71, 110, and Math 215. Reliable design and fault diagnosis; synchronous and asynchronous sequential machines; finite state machines with automata theory.

291. *Special Topics in Computer Engineering.*I, II, S. 1-3 hr. PR: Junior, senior or graduate standing or consent. Special topics not covered in regularly scheduled courses. Investigation of topics not covered in regularly scheduled courses.

Computer Science (C.S.)

5. *Introduction to Computer Applications.* I, II. 4 hr. Concepts. Use of microcomputer. Applications including word processing, spreadsheets, data base and communications. Algorithm design and programming in BASIC.

15. *Introduction to Computer Science.* 4 hr. Programming and program design; simple data types, variables, and expressions; block structures; program modularization through procedures, functions, and packages; repetition and selection through control structures; structured data types, including arrays and records; representative applications. 3 hr. lec., 1 hr. lab.

16. *Principles of Computer Science.* 4 hr. PR: C.S. 15. Design and implementation of programs manipulating complex data structures; sets, files, stacks, lists, trees; searching and sorting; comparison of implementation techniques; analysis of efficiency; dynamic allocation; recurison. 3 hr. lec., 1 hr. lab.

26. *Discrete Mathematics.* 3 hr. PR: C.S. 16 and Math. 15. Traditional mathematics such as functions, relations, set theory, and graph theory; applications to computer science; switching circuits, Boolean algebra, and Karnaugh maps. Equiv. to Math. 26.

56. *Computer Organization and Assembler Programming.* 4 hr. PR: C.S. 16. Machine organization, number systems, assembler and machine language, macros, subroutines, and the use of several computational formats. 3 hr. lec., 1 hr. lab.

60. *Introduction to COBOL Programming.* I. 3 hr. PR: A high-level programming language. COBOL programming assignments will be used to illustrate many features of the language, including the ability to manipulate different types of files.

76. *File Structures.* 4 hr. PR: C.S. 16. Extension of internal data structures to persistent external storage; file design and manipulation; blocking and buffering; secondary storage devices; sequential, direct, indexed, and multi-key data structures and access methods, external searching and sorting. 3 hr. lec., 1 hr. lab.

126. *Analysis of Algorithms.* 3 hr. PR: C.S. 26 and Stat. 201. Greedy, graph theoretic, divide and conquer, and dynamic algorithms; polynomial time algorithms and NP-completeness.

136. *Principles of Programming Languages.*3 hr. PR: C.S. 16. Theoretical and practical aspects of programming languages; historical, current, special- purpose, and experimental languages; comparison of language features and implementation techniques; language selection based on application.

156. *Computer System Concepts.* 3 hr. PR: C.S. 56 or CpE 110. System hardware and software organization, with emphasis on microprocessor systems; operating system concepts, including processes, memory management, and the user interface; elementary network concepts; introduction to UNIX.

170. *Principles of Software Development.* I. 3 hr. PR: C.S. 2. System processes, data management techniques, systems analysis and design, and an overview of system features available in various programming languages. Students will be assigned several projects.

190. *Teaching Practicum.* I, II, S. 1-6 hr. (May be repeated for a maximum of 6 hours.) PR: C.S. 51. Practical classroom experience for undergraduate teaching assistants. Tasks assigned are those designed to provide experience with course design, implementation, evaluation and revision of classroom work.

191. *Special Topics.* I, II, S. 1-6 hr. PR: Consent. Advanced study of special topics in computer science.

195. *Field Experience.* I, II, S. 1-18 hr. PR: C.S. 51. (Total credit applicable toward any Arts and Sciences degrees may not exceed the maximum of 18 hours.) Course for those who wish to work with faculty and field supervisors to design field experiences with planned learning objectives and credit goals.

196. *Computer Science Seminar.* I, II. 1 hr. PR: C.S. 51. Satisfactory completion of the course requires that the student present a 20- to 50-minute talk on a selected topic and attend all scheduled meetings.

216. *Numerical Concepts.* 3 hr. C.S. 126. Computer arithmetic, number representation, and errors; locating roots of equations; interpolation; numerical integration and differentiation; numerical solution of initial value problems for ordinary differential equations; solving systems of linear equations; data smoothing.

220. *Numerical Analysis* 1. I, II. 3 hr. PR: Math. 17 or C.S. 120 and a programming language. Computer arithmetic, roots of equations, interpolation, Gaussian Elimination, numerical integration and differentiation. Numerical solution of initial value problems for ordinary differential equations. Least square approximations. Equiv. to Math. 220.;to be dropped spring 1994.

221. *Numerical Analysis 2.* I, II. 3 hr. PR: C.S. 220 and Math. 241 or consent. Solutions of linear systems by direct and iterative methods. Calculation of eigenvalues, eigenvectors, and inverses of matrices. Applications to ordinary and partial differential equations. (Equiv. to Math. 221.)

228. *Discrete Mathematics 2.* II. 3 hr. PR: C.S. 120 and Math. 16 or equiv. Applications of discrete mathematics to computer science. Methods of solving homogeneous and non-homogeneous recurrence relations using generating functions and characteristic equations; digraphs to analyze computer algorithms; graph theory and its ramifications to computer algorithms. (Equiv. to Math. 228.)

235. *Principles of Programming Languages.* I. 3 hr. PR: C.S. 51 or consent. Survey of several programming languages: historical, current, special-purpose, and experimental. Emphasis on comparison of languages features, implementation techniques, selection of appropriate language for given application. To be dropped spring 1993.

236. *Compiler Construction.* 3 hr. PR: C.S. 136. Theory and practice of the construction of programming language translators; scanning and parsing techniques, semantic processing, runtime storage organization, and code generation; design and implementation of interpreter or compiler by students.

240. *Systems Programming.* I, II. 4 hr. PR: C.S. 51. Software organization for the support of computer components. Addressing techniques, process and data modules, file system organization and management. Traffic control and communication with peripheral devices. To be dropped spring 1994.

241. *Systems Programming.* I. 3 hr. PR: C.S. 240. Memory management; name management; file systems; segmentation; protection; resource allocation; pragmatic aspects in the design and analysis of operating systems. To be dropped spring 1993.

245. *Microcomputer Programming and Interfacing.* II. 3 hr. PR: C.S. 51. Detailed study of a typical microcomputer system including its architecture, operating system, assembly language programming, data communication, computer networking and microcomputer applications 3 hr. lec., 1 2-hr. lab. To be dropped spring 1993.

246. *Automata Theory.* 3 hr. PR: C.S. 136. Introduction to formal languages, grammars, and automata; regular expressions and finite automata, context-free languages and push down automata, context-sensitive languages and linear- bounded automata, and Turing machines and recursively enumerable languages.

255. *Data and Computer Communications.* 3 hr. PR: CS 50 or 51 or equiv. Data and computer communication principles. Major topics include digital data communication techniques, multiplexing, switching, local and wide area networks, protocols and architecture, and special topics of current interest. To be dropped fall 1992.

256. *Operating Systems Structures.* 3 hr. PR: C.S. 156. Support of computer components; device management and interrupts, process scheduling, file management, complete OS structure, OS development and debugging, configuration

258. *Advanced Operating Systems.* 3 hr. PR: C.S. 256. Operating system topics not covered in C.S. 156 or 256; reliability and security, system management, and virtual machine structures; introduction to distributed and realtime systems; emphasis on design issues faced by actual systems.

260. I*nformation Analysis.* I, II. 3 hr. PR: C.S. 51. Information analysis and logical design of a computer system. Exercises and case studies are used to give students proficiency in information analysis techniques. Projects are assigned to provide practical experience in systems development and implementation. To be dropped spring 1993.

266. *Computer Organization and Architecture.* 3 hr. PR: C.S. 156. Computer structure; emphasis on implications for software design; evolution of computers; elementary digital logic; CPU structures; memory and I/O structures; pipelining and memory management; introduction to parallel and high-level architectures.

267. *Microprocessor Structures.* 3 hr. PR: C.S.156. Typical microprocessor system including OS architecture, assembly language programming, and interfacing capabilities.

268. *Data and Computer Communications.* 3 hr. PR: C.S. 156. Introduction to fundamental concepts and principles of data and computer communications; digital data communication techniques, multiplexing, switching, LANs and WANs, and protocols and architecture.

270. *System Design.* I. 3 hr. PR: C.S. 51 or consent. Underlying principles of system design and techniques. A theme to be carried throughout the course is the iterative nature of the analysis and design process. Implementation and conversion problems also are considered. Practical projects are assigned to give students experience in actual situations.

275. *Introduction to Software Engineering.* I, II. PR: Two 200-level computer science courses or equiv. The study of software life cycle, programming methodologies, and project management, with emphasis on an engineering approach to the software development process. Relies on a project-based approach for applying software engineering principles. To be dropped spring 1993.

276. *Advanced Software Engineering.* 3 hr. PR: C.S. 176. Engineering process, project economics, project organizational and management issues, configuration management.

278. *Database Design and Theory.* 3 hr. PR: C.S. 176. Relational data model using relational algebra and SQL and the object-oriented data model; relational database and semantic design theory.

280. *Introduction to Computer Graphics.* I. 3 hr. PR: C.S. 51, 120. Overview of computer graphics systems. Topics include software, algorithms for graphics primitives, two-dimensional viewing and transformations, segmentation, methods of input, and three-dimensional concepts. To be dropped spring 1993.

281. *Introduction to Artificial Intelligence.* I. 3 hr. PR: C.S. 51 or consent. Introductory treatment of foundations of AI and the symbol manipulation language LISP. Survey of the field of AI, production systems, search strategies, game playing, knowledge engineering, weak methods. Applications of AI will be briefly studied.

285. *Computer Organization and Architecture.* I. 3 hr. PR: C.S. 50 and 51. Architecture of current computers and their effects on software design. Von Neumann machines; gates and registers; instruction and address decoding; memory systems; input-output systems; micros, supercomputers, specialized systems. To be dropped spring 1994.

286. *Introduction to Artificial Intelligence.* 3 hr. PR: 176. Survey of AI techniques, heuristics search, game playing, knowledge representation schemes: logic, semantic net, frames, rule-based; natural language processing, advanced AI techniques/ systems:planning, blackboard architecture, neural net model; AI implementation.

288. *Introduction to Computer Graphics.* 3 hr. PR: C.S. 176. Overview of I/O hardware, elements of graphics software, fundamental algorithms, two- dimensional viewing and transformations, design for interaction, and introduction to three-dimensional concepts.

291. *Topics in Computer Science.* I, II, S. 3 hr. PR: C.S. 51 or equiv. Advanced study of topics in computer science.

Curriculum and Instruction (C&I)

7. *Introduction to Education.* I, II, S. 2 hr. Concepts underlying the educational system in the American society. Gives the student experience in identifying the student's values, attitude, and feelings with those of today's community and youth.

100. *Elementary-Early Childhood General Methods.* I, II. 3 hr. PR: C&I 7 and 120, Ed. P. 103, 105, Rdng. 221. Introduction to Education, including analysis of professional problems and procedures in school systems. Includes a required field experience. (This course is a part of the pre-student teaching block which consists of C&I 130, 140, 150, and Rdng. 240.)

104. *Principles of Teaching in Secondary Schools.* I, II, S. 4 hr. General professional education course emphasizing methods applicable to all academic areas. (Not available to undergraduates during summer.)

120. *Elementary-Early Childhood Language Arts.* I, II, S. 3 hr. PR: C&I 7. Conc.: Rdng. 221. Instructional practice to develop communication skills of listening, speaking, and writing.

124. *Teaching Language Arts: Secondary School.* I, II. 3 hr. Includes an examination and application of relevant curricular materials and teaching techniques.

125. *The Teaching of Foreign Languages.* I, II, S. 3 hr. Methods and materials in the secondary school. (Also listed as Lang. 221.)

126. *Methods of Teaching Library Science.* I, II. 2 hr. Methods and materials of high school teaching.

130. *Elementary-Early Childhood Mathematics.* I, II. 3 hr. PR: Math. 33, 34, 131, C&I 120, Ed. P. 103, 105, Rdng. 221. Materials and methods for teaching mathematics emphasizing manipulative devices and activity learning for development of mathematical concepts. Field experience required. (To be taken with C&I 100, 140, 150 and Rdng. 240.)

134. *Teaching Mathematics: Secondary School.* I, II. 3 hr. Includes an examination and application of relevant curricular materials and teaching techniques.

140. *Elementary-Early Childhood Science.* I, II. 3 hr. PR: P. Sci. 1, 2, Biol. 1 or 2, C&I 120, Ed. P. 103 and 105, Rdng. 221. Modern methods and materials for teaching science with emphasis on investigative skills and attitudes. Includes a required field experience. (To be taken concurrently with C&I 100, 130, 150 and Rdng. 240.)

144. *Teaching Science: Secondary School.* I, II. 3 hr. Includes an examination and application of relevant curricular materials and teaching techniques.

150. *Elementary-Early Childhood Social Studies.* I, II. 3 hr. PR: 12 hr. Social Studies, C&I 120, Ed. P. 103 and 105, Rdng. 221. Study of materials and activity-oriented procedures for teaching of social studies. Includes a required field experience. (To be taken with the pre-student block which consists of C&I 100, 130, 140 and Rdng. 240.)

154. *Teaching Social Studies: Secondary School.* I, II. 3 hr. Includes an examination and application of relevant curricular materials and teaching techniques.

160. *Vocational Agriculture.* I, II. 3 hr. Methods and materials of high school teaching. (Also listed as Ag. Ed. 160.)

166. *Art Education in the Secondary School.* II. 3 hr. (Also listed as Art 166.)

167. *Materials and Methods in Elementary School Music.* I, II. 3 hr. (Also listed as Music 151.)

168. *Methods of Teaching Music Education.* I, II, S. 3 hr. Methods and materials in secondary school music. (Also listed as Music 152.)

174. *Methods of Teaching Physical Education.* I, II. 3 hr. Methods of teaching physical education. (Also listed as P.P.E. 133.)

175. *Methods of Teaching Home Economics.* I, II. 3 hr. Methods and materials of high school teaching. (Also listed as H.E.Ed. 175.)

187. *Student Teaching: Elementary-Early Childhood.* I, II. 4-12 hr. PR: For elementary and early childhood undergraduates who meet eligibility requirements and other guidelines. (Applicable to preschool, nursery, day care, child care, kindergarten, primary grade, or elementary school.) Experiences with children 3-5 years of age are required of all students in Early Childhood.

1. At the time of application for student teaching, have a minimum overall grade-point average of 2.50 and a 2.50 average in both specialization and education course work. The above requirements must also be met at the end of the semester prior to student teaching.

2. Have completed all courses in education and three-fourths of course work required in area of specialization before the student teaching semester.

3. Have met the State Board of Education requirements on the Content Special-

ization Test for the area(s) for which certification is being sought.

4. Submit positive evidence that the applicant meets requirements of physical condition and emotional stability necessary for performance of duties as a teacher.

5. Exhibit reading, writing, speaking, and hearing proficiencies necessary for the teaching profession. Remediation will be required before student teaching for those who do not demonstrate acceptable competencies.

6. Admission is by application made before March 1 of the preceding year to the Director of Student Teaching.

7. Additional courses may not be taken with student teaching block. 8.Student teaching will be done in selected centers throughout the state. Students who wish to teach in an Indian Reservation school must make that decision in the Junior year. Therefore, students should be prepared to live off-campus if so assigned and to provide their own transportation.

NOTE: Students must avoid employment, social commitments, or housing contracts which would interfere with an off-campus assignment.

188. *Student Teaching: Secondary Education.* I, II. 4-12 hr. PR: Students enrolled in Secondary Education undergraduate programs who meet eligibility requirements and other guidelines:

1. At the time of application for student teaching have a minimum overall grade-point average of a 2.50, 2.50 average in course work in the teaching fields, and 2.50 average in education course work. The above requirements must also be met at the end of the semester prior to student teaching (not including summer sessions).

2. Have completed all courses in education and three-fourths of course work required in each teaching field before the student teaching semester.

3. Have met the State Board of Education requirements on the Content Specialization Test for the area(s) for which certification is being sought.

4. Submit positive evidence that the applicant meets requirements of physical condition and emotional stability necessary for performance of duties of a teacher.

5. Exhibit reading, writing, speaking, and hearing proficiencies necessary for the teaching profession. Remediation will be required before student teaching for those who do not demonstrate acceptable competencies.

6. Admission is by application made before March 1 of the preceding year to the Director of Student Teaching.

7. Additional courses may not be taken with student teaching block. 8.Student teaching will be done in selected centers throughout the state. Students who wish to teach in an Indian Reservation school must make that decision in the Junior year. Therefore, students should be prepared to live off campus if so assigned and to provide their own transportation.

NOTE: Students must avoid employment, social commitments, or housing contracts which would interfere with an off-campus assignment.

205. *The Junior High School.* I, II, S. 2 hr. PR: Consent. Developing philosophy, program, and practices of the junior high school.

210. *Early Childhood Education 1.* I, II, S. 3 hr. PR: CD&FS 216, Ed. P. 103 or 105. (A field experience with children 3-5 years of age is required.) instruction and program organization, development and evaluation. The content of this course is applicable to field placement in a preschool, nursery school, day care, and/or childhood care center.

211. *Early Childhood Education 2.* I, II, S. 3 hr. PR: CD&FS 216, Ed. P. 103 or 105. (A field experience with children 3-5 years of age is required.) This course is designed for individuals who will be working with early childhood programs for children under 8 years of age. The various aspects of early childhood education are studied in relationship to organizational and administrative structures; includes planning, budgeting, staffing, supervising, and evaluating comprehensive learning facilities for young children.

212. *Methods in Preschool Education.* I. 3 hr. PR: Ed. F. 1 or C&I 7 or equiv. Development of an experiential model of teaching young children. Application of methods in

basic needs areas of nursery-early childhood education consistent with an experiential model of teaching.

214. *Creative Experiences in Early Childhood.* II. 3 hr. PR: Ed. F. 1 or C&I 7 or equiv. Examination of creative experiences for young children and their relationship to child development. A special focus on play behavior as a learning medium with emphasis on program planning, curriculum development, and instructional strategies.

216. *Early Language and Communication Experiences.* I. 3 hr. PR: Ed. F. 1 or C&I 7 or equiv. Presents activities for developing language and communication skills in children 2-5 years of age. Covers a broad range of temporary and enduring forms of communication in visible and audible media.

218. *Management of Preschool Education.* II. (Alternate Years.) 3 hr. PR: Ed. F. 1 or C&I 7 or equiv. (A field experience with children 2-5 years of age is required.) Planning, designing, and assessing programs for children ages 2-5 years with emphasis on management skills.

224. *Approaches to Teaching Language.* II. 2 hr. PR: Lingu. 1 and Engl. 2. Designed for prospective teachers of English and language arts. Focus is upon planning and implementing methods of teaching English as a language. Materials and resources appropriate for public school instruction are analyzed and utilized.

225. *Approaches to Teaching Literature.* II. 2 hr. PR: Junior standing. Designed for prospective teachers of English and language arts. Course focuses upon methodologies for teaching literature in public schools. Workshop format will provide opportunities for peer teaching activities as students apply methods of teaching literature.

280. *Special Problems and Workshops.* I, II, S. 2-4 hr. (Maximum of 8 semester hours may be applied toward the master's degree.) PR: 14 hr. in education. Credits for special workshops and short intensive unit courses on methods, supervision, and other special topics.

Dance (Dance)

4. *Beginning Ballet.* I, II, S. 1 hr. Simple ballet techniques, positions, basic barre work, and movements of dancing.

5. *Ballroom Dance.* I, II. 1 hr.

6. *Elementary Jazz Dance.* I, II, S. 1 hr. Expressions of feelings through body movement to the jazz dance rhythms.

7. *Intermediate Jazz Dance.* I, II. 1 hr. PR: Dance 6 or consent. Further development of jazz technique and appreciation of jazz as an American art form.

9. *Ballet 2.* I, II. 1 hr. PR: Dance 4 or equiv. Ballet vocabulary with emphasis on barre work and adagio and allegro technique.

11. *Folk Dance.* I, II. 1 hr.

12. *Tap Dance 1.* I, II, S. 1 hr. Introduction to tap dance technique, including study of basic tap vocabulary, fundamental rhythms, locomotor movements and tap styles.

13. *Tap Dance 2.* I, II, S. 1 hr. PR: Dance 12. Expansion and development of the basic tap technique and vocabulary introduced in Dance 12. Introduction to Irishes, riffs, pull-backs, waltz tap, basic traveling steps, and standard audition material.

14. *Tap Dance 3.* I, II, S. 1 hr. PR: Dance 13. Intermediate-level tap technique. Course includes the study of wings, cramp-rolls, advanced riffs, time steps, breaks, turns, and soft-shoe dancing.

15. *Tap Dance 4.* I, II, S. 1 hr. PR: Dance 14. Advanced-level tap technique. Course is designed to develop speed, control, precise articulation, rhythmic accuracy, and effective dynamics. Elements of tap style, line, and performance will be studied.

17. *Elementary Modern Dance.* I, II. 1 hr.

19. *Intermediate Modern Dance.* I, II, S. 1 hr. PR: Dance 17 or 35 or consent. An extended study of modern techniques in dance developing form, control, and style.

20. *Advanced Modern Dance.* I, II. 1 hr. PR: Consent.

35. *Theory and Practice of Modern Dance Techniques.* I, II. 2 hr. Modern dance techniques and rhythmic analysis of movement patterns.

37. *Advanced Dance Techniques with Principles of Choreography.* II. 2 hr. PR: Dance 35. Concentrated study in creative movement problems.

38. *Dance Composition.* II. 2 hr. PR: Dance 35, 37. Problems in force, time, and space as elements of expressive movement.

39. *Folk and Ballroom Dance.* I, II. 2 hr. Folk, square, and ballroom dance forms.

70. *Elementary Ballet.* I. 2 hr. PR: Dance 4 or consent. Technique of classical theatrical dancing. Includes barre exercises, port de bras, basic adage movements, and center practice in jumping and beginning turns. A thorough theoretical knowledge, as well as technical achievement, is stressed.

71. *Intermediate Ballet.* II. 2 hr. PR: Dance 70 or consent. >Technique of classical theatrical dancing. Includes barre exercises, port de bras, adage combinations and center practice in jumping, pirouettes, turns and basic pointe work. Emphasis on correct technical execution, purity of line, and classical style.

73. *Advanced Ballet.* I. 2 hr. PR: Dance 70, 71 or consent. Technique of classical theatrical dancing. Includes barre exercises, port de bras, adage, allegro, tours, and pointe work in complex and varied movement combinations. Theoretical knowledge and teaching fundamentals will also be developed.

75. *Ballet Repertoire.* II. 2 hr. PR: Dance 70, 71, 73 or consent. Study of the standard corps de ballet and solo variations from the classics of the nineteenth and twentieth century ballet repertoire. Also includes contemporary choreography, pointe work, and elementary partnering techniques.

82. *Jazz* 1. I, II. 2 hr. Basic jazz dance fundamentals and techniques; development of coordination, strength, and flexibility through the execution of the elementary jazz warm-ups, movement progressions, and combinations.

83. *Jazz 2.* II. 2 hr. PR: Dance 82 or consent. Continuation of jazz dance techniques and concepts with an emphasis on jazz isolations, polyrhythms, and syncopated movement sequences; continued persistence in the development of the body as an instrument of expression.

85. *Jazz 3.* I. 2 hr. PR: Dance 83 or consent. In-depth exploration of both traditional and contemporary jazz techniques and styles; continues progression towards a more advanced level of technical skill as developed and utilized through this specific dance expression.

87. *Advanced Folk Dance.* II. 2 hr. PR: Dance 39 or equiv. Advanced study of international folk dance. Includes its place in education and as a performing art and an analysis of the cultural and social backgrounds and their effect of international dance.

88. *Intermediate Modern Technique.* I, II. 2 hr. PR: Dance 17, 18, or combination of Dance 35, 37, 38 or consent. Intensive concentration of technique form, interpretation and artistic sensitivity of performance with kinesthetic awareness.

90. *Advanced Modern Technique and Repertoire.* I. 2 hr. PR: A combination of Dance 35, 37, 38 and 88 or consent. Advanced tutorial technique courses relating advanced theories and individual study in the design of technique, style and compositional form. The study incorporates the allied areas of music, art, and spoken word as stimulating effects.

102. *Dance Production 1.* I. 2 hr. Lecture and laboratory theories of dance production with creative projects and/or performance in the production of dance. Choreography concepts visualized and developed in the theatricality of composition, costume design, and stage design will be included.

103. *Dance Production 2.* II. 2 hr. PR: Dance 102. An in-depth concentration of dance production as an art form. Choreography concepts fully developed for performance with staging techniques, utilizing the dimensional elements of this space-time-art.

171. *Basic Rhythms and Dance Accompaniment.* II. 2 hr. PR: One semester of modern dance. Basic principles of rhythm as they relate to body movement. (Ability to play the piano is not required.)

198. *Special Topics.* I, II, S. 1-3 hr. PR: Consent of department chairperson. Designed to permit in-depth study of theatrical dance forms and production through an innovative course(s) or research or field experiences not included in the major curriculum but as an adjunct to the curriculum.

201. *Rhythms and Dance.* I. 3 hr. An exploration of dance technique in its relation to composition and principles of choreography; developing an aesthetic and critical awareness of these principles as they are displayed in dance works.

202. *Modern Dance Techniques and Composition.* II. 3 hr. PR: Dance 35 or 37 or consent. Scientific principles of movement; basic principles of music as related to dance movement; choreographic principles; practicum in dance movement. Principles for teaching dance and problems involved in planning programs.

203. *American Folk Dance.* I. 3 hr. PR: Dance 39 or consent. American square, contra, circle, and round dance, and their relationships in the arts and aspects of American culture.

204. *History and Philosophy of Dance.* II. 3 hr. Cultural survey of dance as an expression of the society it represents; philosophy of dance; relation of dance to other art forms; dance as an educational experience.

210. *Theatre Dance 1.* I. 2 hr. PR: Dance 9. Develops a basic practical knowledge of choreographed movement in the musical theatre dance idiom. Includes a study of fundamentals of ballet for the actor, derivative musical/rhythmic forms, and elementary Broadway dance vocabulary and styles. (Also listed as Theat. 210.)

211. *Theatre Dance 2.* II. 2 hr. PR: Dance 210/Theat. 210. Comprehensive study of representative musical theatre dance styles, relative to period (1900 to present) and ethnic derivation. Includes study of isolationary movement and principles of classical dance applicable to the Broadway idiom. (Also listed as Theat. 211.)

212. *Theatre Dance Repertory.* I. 2 hr. PR: Dance 211/Theat. 211. Develops and expands the technical and stylistic fundamentals established in the Dance 210-211/ Theat. 210-211 courses, applying them to reconstruction and staging of a variety of classic dance sequences from notable Broadway musicals. (Also listed as Theat. 212.)

213. *Theatre Dance Performance Workshop.* II. 2 hr. PR: Dance 212/Theat. 212. Continues study of dance technique, isolationary movement and stylistic vocabularies established in previous theatre dance courses. Emphasizes development of original choreography in representative Broadway dance styles. Includes study of elements of performance in musical theatre. (Also listed as Theat. 213.)

Economics (Econ.)

51. *The Economic System.* I, II. 3 hr. Introduction to the analysis of the economic system. Pricing system, monetary system, determination of national income and employment. A one-semester principles course for non- majors.

54. *Principles of Economics.* I, II. 3 hr. PR: Sophomore standing. Introductory microeconomic analysis. Competitive behavior of firms, price determination, efficiency in production and equity in distribution.

55. *Principles of Economics.* I, II. 3 hr. PR: Econ. 54 and sophomore standing. Introductory macroeconomic analysis. Aggregate demand and supply, saving, investment, the level of employment and national income determination, monetary and fiscal policy.

110. *Comparative Economic Systems.* I or II. 3 hr. PR: Econ. 54, 55. Structure and processes of existing economic systems throughout the world including review of basic principles of free enterprise, socialistic, communistic, and fascistic societies. Comprehensive analysis based on current and recent experiments in these economies.

125. *Elementary Business and Economic Statistics.* I, II, S. 3 hr. PR: Grade of C or better in either Math. 3 or Math. 14 or consent. Basic concepts of statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression and correlation with emphasis on business and economic examples. (Equiv. to Stat. 101.)

130. *Money and Banking.* I, II. 3 hr. PR: Econ. 54, 55. The U.S. monetary and banking system and its functional relationship to the economic system; monetary theory and policy.

160. *Labor Economics.* I, II, S. 3 hr. PR: Econ. 54, 55. Survey of labor in the United States economy. Introduction to theories of employment and wage determination. Topics include labor history and law, the changing work roles of women, minority opportunities, and the problem of unemployment.

200. *Special Topics.* I, II, S. 1-4 hr. PR: Econ. 54, 55 or consent. Special topics relevant to economics. (Maximum of nine semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward the bachelor's and master's degrees.)

211. *Intermediate Microeconomic Theory.* I, II. 3 hr. PR: Econ. 54. Consumer choice and demand; economics of time; price and output determination and resource allocation in the firm and market under a variety of competitive conditions; welfare economics, externalities, public goods, and market failure.

212. *Intermediate Macroeconomic Theory.* I, II. 3 hr. PR: Econ. 54, 55. Forces which determine the level of income, employment, and output. Particular attention to consumer behavior, investment determination, and government fiscal policy.

213. *Economic Development.* I or II. 3 hr. PR: Econ. 54, 55. The problems, changes, and principal policy issues faced by nonindustrialized countries.

216. *History of Economic Thought.* I or II. 3 hr. PR: Econ. 54, 55. Economic ideas in perspective of historic development.

220. *Introduction to Mathematical Economics.* I or II. 3 hr. PR: Math. 15 or 128, and Econ. 54, 55; or consent. Principal mathematical techniques including set operation, matrix algebra, differential and integral calculus employed in economic analysis. Particular attention given to static (or equilibrium) analysis, comparative-static analysis and optimization problems in economics.

225. *Applied Business and Economic Statistics.* I, II. 3 hr. PR: Econ. 125 or Stat. 101 or consent. Continuation of Econ. 125. Principal statistical methods used in applied business and economic research including multiple regression, index numbers, time series analysis, forecasting models and methods, and sampling design.

226. *Introductory Econometrics.* II. 3 hr. PR: Econ. 54 and 55 and Econ. 125 or Stat. 101. Statistical methods applied to the analysis of economic models and data. Emphasis placed on multiple regression, multicollinearity, seasonality, heteroscedasticity, autocorrelation, dummy variables, time series analysis, distributed lags and simultaneous equations with economics and computer applications.

241. *Public Finance.* I, II. 3 hr. PR: Econ. 54, 55. Governmental fiscal organizations and policy; taxes and tax systems with particular emphasis on federal government and state of West Virginia.

245. *Government and Business.* I, II. 3 hr. PR: Econ. 54, 55. Market structure, conduct and performance: analysis of the antitrust laws—judicial interpretation and effect on the business sector.

250. *International Economics.* I or II. 3 hr. PR: Econ. 54, 55. Development of trade among nations; theories of trade; policies, physical factors, trends, and barriers in international economics.

255. *Regional Economics.* I. 3 hr. PR: Econ. 54, 55. Analysis of the regional economy's spatial dimension, emphasizing interregional capital and labor mobility, the role of cities, objectives and issues of regional policy, lagging regions and Appalachia, growth poles, and regional growth and income distribution.

257. *Urban Economics.* II. 3 hr. PR: Econ. 54, 55. Analysis of spatial dimensions of the urban economy, emphasizing both urban economic theory and urban policy. Issues include cities and income inequality, urban upgrading function, blight, economics of ghettos, the economies of urban size.

270. *Growth of the American Economy.* I or II. 3 hr. PR: Econ. 54, 55. Central issues in the development of the American economy.

297. *Internship.* I, II, S. 1-12 hr. PR: Econ. 54, 55 and departmental approval. Field experience in the analysis and solution of economic problems in the public and private sectors.

299. *Readings in Economics.* I, II, S. 1-3 hr. PR: Econ. 54, 55. Students will develop and carry out a program of specialized readings under the supervision of a cooperating instructor.

Educational Psychology (Ed. P.)

103. *Human Development and Learning.* I, II, S. 3 hr. Emphasis on development, standardized measurement, and classroom management.

105. *Human Development and Learning.* I, II, S. 3 hr. Emphasizes competencies in applying principles of learning and measurement in classroom instruction.

231. *Sampling Methods.* I. 3 hr. PR: An introductory course in statistics. Methods of sampling from finite and infinite populations, choice of sampling unit, sample survey design, estimation of confidence limits and optimum sample size, and single- and multi-state sampling procedures. (Also listed as Stat. 231.)

260. *Media and Microcomputers in Instruction.* I, II, S. 3 hr. The effective operation and educational uses of educational media including microcomputers. Hands-on experience with equipment, and in designing materials for an instructional unit incorporating media and/or microcomputers.

269. *Behavioral Technology for Education.* I, II, S. 3 hr. PR: Ed. P. 105 recommended. Behavioral science applied to instructional systems. Complex systems; feedback loops; measuring relevant variables, collecting data. Applying schedules of reinforcement. Effective stimulus control for students and administrators. Relationship between system and institution. Behavioral ethics.

Electrical Engineering (E.E.)

21. *Introduction to Electrical Engineering.* 3 hr. PR: Engr. 2, Math. 16, Phys. 11. Electrical engineering units, circuit elements, circuit laws, measurement principles, mesh and node equations, network theorems, energy storage elements, RC and RL circuits, unit step response, second order circuits, sinusoids and phasors and introduction to network theory. 3 hr. lec.

22. *Introduction to Electrical Engineering Laboratory.* 1 hr. Coreq.: E.E. 21. Laboratory experiments in measurement of electrical quantities and circuit parameters. Use of the digital computer to solve circuit problems. 3 hr. lab.

24. *Electrical Circuits.* 3 hr. PR:E.E. 21, E.E. 22, Math. 18 (or Coreq.). Introduction to network analysis. Sinusoidal (AC) steady state, average and RMS values, polyphase systems, complex frequency, network frequency response, two port networks and transformers, Fourier methods and Laplace Transforms. 3 hr. lec.

25. *Electrical Circuits Laboratory.* 1 hr. Coreq.: E.E. 24. Laboratory experiments in measurement of electrical circuit behavior and parameters. Use of digital computer to solve circuit problems. 3 hr. lab.

56. *Digital Electronics.* 3 hr. PR: EE 21, 22, Phys.12, Math. 17, CpE 71. Implementation of digital electronic circuits. Bipolar and field-effect logic gates: logic levels, circuit configuration and interfacing. Implementation of digital systems: registers, counters, memory, and microprocessors. 3 hr. lec.

57. *Digital Electronics Laboratory.* 1 hr. PR: Coreq.: EE 56. Design, fabrication, and measurement of digital electronic circuits. Use of discrete devices, integrated logic, display devices, and timer circuits. Study of A/D and D/A circuits and interfaces.

101. *Introduction to Electrical Power Devices and Systems.* 3 hr. PR: Junior or senior standing in engineering (not open to Electrical Engineering majors). Fundamental principles of electric and magnetic properties. DC and AC circuits. Application to single- and three-phase systems, motor control, circuit protection, safety. 3 hr. lec.

102. *Basic Electrical Laboratory.* 1 hr. Coreq: E.E. 101. Laboratory experiments in measurement of electrical quantities and circuit parameters. 3 hr. lab.

103. *Introduction to Electronic Instrumentation.* 3 hr. PR: Junior or senior standing in engineering (Not open to Electrical Engineering majors). Electrical fundamentals, analog and digital devices and circuits, communication and telemetry, measurement instruments and techniques. 3 hr. lec.

104. *Instrumentation Laboratory.* 1 hr. Coreq.: E.E. 103. Laboratory experiments demonstrating the characteristics of electron devices and the performance of digital and analog instrumentation and control systems. 3 hr. lab.

124. *Signals and Systems 1.* 3 hr. PR: Math. 18, E.E. 24. Introduction to linear systems models and solutions in the time and frequency domains. Balanced emphasis is placed on both continuous and discrete time and frequency methods. 3 hr. lec.

126. *Signals and Systems 2.* 3 hr. PR: E.E. 124. Statistical description of nondeterministic signals, correlation functions and spectral density. Sampling theory, filtering random signals and noise. Modulation techniques, AM/FM/TV transmitters/receivers. Concepts applied to various communication and feedback systems. 3 hr. lec.

127. *Signals and Systems 1 Laboratory.* 1 hr. Coreq.: E.E. 124. Laboratory experiments in measurement of electrical system and signal parameters. 3 hr. lab.

128. *Systems Theory.* 3 hr. Coreq.: E.E. 126. Analysis of systems described by transfer functions or state variables. Block diagrams, signal flow graphs, stability, feedback control. Discrete state space models, difference equations, and z transforms. Analysis of stochastic systems. 3 hr. rec.

130. *Electromechanical Energy Conversion.* 3 hr. PR: E.E. 124, 127, 140. Fundamentals of electromechanical energy conversion, transformers and rotating machinery. 3 hr. lec.

131. *Introduction to Power Systems.* 3 hr. PR: E.E. 130, 135. Analysis of power system elements connected together as an integrated system for the transmission and distribution of electric power. Load flow, symmetrical components. 3 hr. lec.

135. *Energy Conversion Laboratory.* 1 hr. Coreq: E.E. 130. DC motor and generator performance and characteristics, single-phase transformer, AC machines, synchronous machine and induction motor performances and characteristics. 3 hr. lab.

136. *Power Systems Laboratory.* 1 hr. Coreq.: E.E. 131. The power system simulator is used for experiments dealing with generation, transmission, distribution, and protection. The aspect of interconnection with other systems is explored. 3 hr. lab.

140. *Electric and Magnetic Fields* . 1. 3 hr. PR: Math. 18, Phys. 12. Introduction to vector analysis, orthogonal coordinate systems, Maxwell's equations, scalar and vector potentials, electric and magnetic static fields, boundary-value problems, Laplace's and Poisson's equation, electromagnetic static fields. 3 hr. lec.

141. *Electric and Magnetic Fields 2.* 3 hr. PR: E.E. 140. Plane waves in lossless and dissipative media, polarization, reflection and refraction of plane waves, lossless and dissipative transmission lines, waveguides, radiation and antennas. 3 hr. lec.

143. *Electromagnetic Field Theory.* 3 hr. PR: Math. 18, Physics 12. Introduction to vector analysis, orthogonal coordinate systems, Maxwell's equations, scalar and vector potential, electric and magnetic fields, plane waves, reflection and refraction of plane waves, transmission lines. 3 hr. rec.

151. *Electronic Properties of Materials.* 4 hr. PR: E.E. 24, 25, Phys. 12, Math. 18. Physical principles of electric charge transport in solids and gases. Application of these principles to the study of junction diodes and bipolar and field-effect transistors, their terminal characteristics and circuit behavior. 4 hr. lec.

153. *Introduction to Diodes and Transistors.* 1 hr. PR: E.E. 24, 25, Physics 12, Math. 18. The study of junction diodes and bi-polar and field- effect transistors, their terminal characteristics, and circuit behavior.

156. *Digital Electronics.* 2 hr. PR: Cp.E. 71, E.E.151. Implementation of digital electronic circuits. Bipolar and field-effect logic gates with special emphasis on logic levels, circuit configuration and interfacing. Implementation of digital systems: registers, counters, memory, and microprocessors.

157. *Digital Electronics Laboratory.* 1 hr. Coreq.: E.E. 156. Design, fabrication, and measurement of digital electronic circuits. Use of discrete devices, integrated logic, dis play devices, and timer circuits. Study of A/D and D/A circuits and interfaces. 3 hr. lab.

158. *Analog Electronics.* 3 hr. PR: E.E. 124, 127, 151. Electronic devices in analog circuits. Small-signal and graphical analysis of BJT and FET circuits; frequency response, feedback, and stability. Linear and nonlinear operational amplifier circuits. Power amplifiers and power control by electronic devices. 3 hr. lec.

159. *Analog Electronics Laboratory.* 1 hr. Coreq.: E.E. 158. Design, fabrication, and measurement of analog electronic circuits. Use of discrete devices, integrated circuits, operational amplifiers, and power electronic devices. Study of biasing and stability, frequency response, filters, analog computation circuits, and power control circuits. 3 hr. lab.

180. *Senior Design Seminar.* 2 hr. PR: Penultimate semester. Design methodology, including specifications, reliability, design optimization, patent searching, cost estimating, project planning and scheduling, and design

181. *Senior Design Project.* 3 hr. PR: E.E. 130, 156, 158, 180 or consent. Detailed design and execution of an electrical engineering project. Emphasis is placed on the professional approach to the analysis and solution of an engineering problem. Other topics include professional development, legal and ethical aspects of engineering.

208. *Power Electronics.* 3 hr. PR: E.E. 130 and E.E. 158, 159 (concurrently) or consent. Application of power semiconductor components and devices to power system problems; power control, conditioning processing, and switching. Course supplemented by laboratory problems. 3 hr. lec.

216. *Fundamentals of Control Systems.* 3 hr. PR: E.E. 124, 127. Introduction to classical and modern control; signal flow graphs; state- variable characterization; time-domain, root-locus, and frequency techniques; stability criteria. 3 hr. lec.

230. *Electrical Power Distribution Systems.* 3 hr. PR: E.E. 131, 136 or consent. General considerations; load characteristics; subtransmission and distribution substations; primary and secondary distribution, secondary network systems; distribution transformers; voltage regulation and application of capacitors; voltage fluctuations; protective device coordination. 3 hr. lec.

231. *Power Systems Analysis.* 3 hr. PR: E.E. 131, 136 or consent. Incidence and network matrices, Y\ndBus, symmetrical and unsymmetrical faults, load-flow and economic dispatch, MW-frequency and MVAR-voltage control. The power system simulator will be used for demonstrations. 3 hr. lec.

244. *Introduction to Antennas and Radiating Systems.* 3 hr. PR: E.E. 141 or consent. Fundamentals, parameters, radiation integrals, linear antennas, far- field approximations, loop antennas, arrays and continuous distributions, mutual impedance, broadband dipoles and matching techniques, traveling wave and broadband antennas, frequency independent antennas, and aperture antennas. 3 hr. lec.

245. *Microwave Circuits and Devices.* 3 hr. PR: E.E. 141. UHF transmission line theory, impedance matching techniques and charts, general circuit theory of one port and multiports for waveguiding systems, impedance and scattering matrices, wave guide circuit elements, microwave energy sources. Course will be supplemented by laboratory problems. 3 hr. lec.

246. *Radar and RF Systems Engineering.* 3 hr. PR: E.E. 126, 141, 156, 157, 158, 159. Introduction to radar system fundamentals and techniques, including discussion of modulation and detection theory, RF amplifiers, mixers, antennas, and propagation effects. Application of probability and statistics to signal processing and detection in noise. 3 hr. lec.

248. *Fiber Optics Communications.* 3 hr. PR: E.E. 126, 141, 151. Fundamentals of optics and light wave propagation, guided wave propagation and optical wave guides,

light sources and light detectors, couplers, connections, and fiber networks, modulation noise and detection in communication systems. 3 hr. lec.

251. *Noise and Grounding of Electronic Systems.* 1 hr. PR: E.E. 158, 159 or consent. Analysis of extrinsic and intrinsic noise in electronic circuits. Design techniques to reduce or eliminate noise. 1 hr. rec.

252. *Operational Amplifier Applications.* 3 hr. PR: E.E. 158, 159. Linear integrated circuit building blocks applied to such functions as amplification, controlled frequency response, analog-digital conversion, sampling, and waveform generation. 2 hr. lec., 3 hr. lab.

257. *Transistor Circuits.* 3 hr. PR: E.E. 158, 159 or equiv. Analysis and design of subcircuits used in analog integrated circuit modules. Transistor models, low-frequency response of multistage amplifiers, current sources, output stages and active loads. 3 hr. lec.

259. *Solid State RF Engineering.* 3 hr. PR: E.E. 126, 141, 156, 158, or corequisite. Analysis and design of electronic circuitry for RF telecommunications systems. Treatment of electrical noise, RF amplifiers, oscillators and mixers. Applications to AM/FM/TV. Receiver and transmitter technology for HF/VHF/UHF and satellite communication. 3 hr. lec.

264. *Introduction to Communications Systems.* 3 hr. PR: E.E. 126. Introduction to the first principles of communications systems design. Analysis and comparison of standard analog and pulse modulation techniques relative to bandwidth, noise, threshold, and hardware constraints. Communications systems treated as opposed to individual circuits and components of the system. 3 hr. lec.

268. *Digital Signal Processing Fundamentals.* 3 hr. PR: E.E. 126, 127, 156, 157. Theories, techniques, and procedure used in analysis, design, and implementation of digital and sampled data filters. Algorithms and computer programming for software realization. Digital and sampled data realizations, switched capacitor and charge-coupled device IC's. 3 hr. lec.

281. *Biomedical Electrical Measurements.* 2 hr. PR: E.E. 158 and 159 or consent. Biomedical instrumentation for human subjects. Origin and characteristics of biological electrical signals. Instrument design requirements and detailed analysis of cardiac support and intensive-care monitoring equipment. 2 hr. lec.

291. *Special topics in Electrical Engineering.* 1-3 hr. PR: Junior, senior, or graduate standing, or consent. The investigation of advanced topics not covered in regularly scheduled courses. 1-3 hr. lec.

Engineering of Mines (E M)

102. *Mine Surveying.* 1 hr. PR: M. 2. Field experience in underground and surface surveying, with map work and calculations; occasional lectures to clarify field procedures.

103. *Surface Mining.* II. 3 hr. PR: M. 1, Geol. 1. Surface mining methods with emphasis on planning, production, and equipment systems.

104. *Underground Mining.* I. 3 hr. PR: M. 1, Geol. 1. Underground mining methods for both bedded deposits and ore bodies; consideration of factors in the design (development) phase and production (exploitation) phase of an underground mining operation; application of mining machinery.

191. *Special Topics.* I, II. 1-3 hr. PR: Junior or senior standing, consent. (Undergraduate majors only.) Selected fields of study in mining engineering.

204. *Mining Methods for Vein Deposits.* I. 3 hr. PR: M. 2, Geol. 151, Math. 16. Methods and systems of mining other than flat seams. Emphasis on selection of methods in relation to cohesive strength of ore bodies and their enclosing wall rocks. Mining of anthracite included.

205. *Coal Mining.* I. 3 hr. PR: Junior standing or consent. (Not open to mining engineering students.) Introduction to elements of coal mining.

206. *Mining Exploration and Evaluation.* I. 3 hr. PR: M. 1, Geol. 151, E.M. 104, Phys. 12. All phases of mineral exploration. Geological and geophysical methods, exploration drilling, data reduction and interpretation, preliminary feasibility studies and evaluation.

207. *Longwall Mining.* II. 3 hr. PR: E.M. 104. Elements of longwall mining including panel layout and design considerations, strata mechanics, powered supports, coal cutting by shearer or plow, conveyor transportation, and face move.

211. *Ground Control.* II. 4 hr. PR: E.M. 104, M.A.E. 41, 43, Geol. 151. Rock properties and behavior, <in situ >stress field, mine layout and geological effects; designs of entry and pillar and roof bolting, convergence of openings and surface subsidence engineering. Laboratory sessions and design projects.

214. *Rock Mechanics.* I. 3 hr. PR: M.A.E. 43 or consent. Elastic and plastic properties of rock, Mohr's criteria of failure, elastic theory, stress distributions around underground openings, open pit and underground stability, rock testing techniques.

224. *Special Subjects for Mining Engineering.* I, II. 1-6 hr. PR: Senior or graduate standing or consent. Special problems in mining engineering, including choices among operations research, mine systems analysis, coal and mineral preparation, and coal science and technology.

225. *Underground Mining Equipment.* II. 3 hr. PR: E.E. 101, E.M. 104, M.A.E. 42. Analysis of equipment requirements for mining functions; design of specific equipment components and operations; and optimization of equipment and layout choices. Course will focus on face equipment.

226. *Surface Mining Equipment.* I. 3 hr. PR: E.M. 103, M.A.E. 42. Major elements of surface mining equipment, selection and application; design of a conceptual surface mining operation. Included are bulldozers, scrapers, trucks, front-end loaders, hydraulic excavators, electric shovels, draglines, and bucket wheel excavators.

231. *Mine Ventilation.* I. 3 hr. PR: E.M. 104, M.A.E. 114. Engineering principles, purposes, methods, and equipment applied to the ventilation of mines.

242. *Mine Health and Safety.* II. 3 hr. PR: E.M. 103, 104. The nature of the federal and state laws pertaining to coal mine health and safety; emphasis will be placed on achieving compliance through effective mine planning, design, and mine health and safety management.

243. *Industrial Safety Engineering.* I. 3 hr. PR: Junior standing or consent. Problems of industrial safety and accident prevention, laws pertaining to industrial safety and health, compensation plans and laws, and industrial property protection.

251. *Explosive Engineering.* I. 3 hr. PR: Chem. 16, Phys. 12, M.A.E. 42. Theory and application of explosives and blasting agents; composition, properties and blasting design fundamentals, underground and surface blasting, vibrations and air blast, blasting safety.

271. *Mine Management.* II. 3 hr. PR: E.M. 103, 104. Economic, governmental, social, and cost and labor aspects of mining as related to the management of a mining enterprise.

276. *Mine and Mineral Reserve Valuation.* I. 3 hr. PR: Senior standing. Methods used to value mineral properties; factors affecting value of mineral properties.

286. *Fire Control Engineering.* II. 3-4 hr. PR: Senior standing. Aspects involved in the control from fire, explosion, and other related hazards. Protective considerations in building design and construction. Fire and explosive protection organization including fire detection and control. 3 lec. and/or 3 hr. lab.

287. *Applied Geophysics for Mining Engineers.* I. 3 hr. PR: E.M. 103, 104, Phys. 12, Geol. 151 or consent. Origin of the universe and the planets, heat and age of the earth. Application of the science of geophysics in the location and analysis of earthquakes and in prospecting for oil and minerals.

291. *Mine Plant Design.* II. 3 hr. PR: Senior standing. Layout, analysis and detailing of the major mine installations, and support facilities. Locations include: the surface plant, shaft and slope stations, section centers. Systems dealt with are bulk handling, power, ventilation, supplies, water, and personnel.

295. *Mine Systems Design.* I. 3 hr. PR: E.M. 103, 104, consent. Each student selects and designs a mine subsystem under specified conditions, including extraction, transportation, ventilation, roof control, exploration, plant design, surface facilities, etc. 2 hr. lec., 1 hr. lab.

296. *Mine Design.* II. 3 hr. (Penultimate semester) PR: Senior standing. Comprehensive design problem involving underground mining developments, surface plant or both, as selected by the student in consultation with instructor. Preparation of a complete report on the problem required, including drawings, specifications, and cost analysis.

English As a Foreign Language (EFL)

51. *Intermediate Conversational English.* I, II, S. 3 hr. This course will emphasize colloquial and idiomatic English expression, concentrating on listening comprehension and communicative skills. Does not satisfy the Engl. 1 and 2 requirement.

52. *Advanced Conversational English.* I, II, S. 3 hr. PR: EFL 51 or consent. Continuation of EFL 51. Does not satisfy the Engl. 1 and 2 requirement.

53. *English Grammar and Composition.* I, II, S. 3 hr. For foreign students only. Review of basic principles of English grammar, introduction to reading techniques, introduction to principles of composition. Vocabulary, punctuation, and spelling. Does not satisfy the Engl. 1 and 2 requirement.

54. *Intermediate English Grammar and Composition.* I, II, S. 3 hr. PR: EFL 53 or consent. Continuation of EFL 53. For foreign students only. Does not satisfy the Engl. 1 and 2 requirement.

55. *Advanced English Grammar and Composition.* I, II, S. 3 hr. PR: Consent. For foreign students only. An introduction to the specific skills and vocabulary needed to communicate effectively in the student's chosen specialization. Focuses on problems peculiar to foreign students in their areas of study. Does not satisfy the Engl. 1 and 2 requirement.

191. *Special Topics.* I, II, S. 1-4 hr.* PR: Consent.

195. *Field Experience.* I, II, S. 1-18 hr.* PR: Consent.

English Language and Literature (Engl.)

Courses in Writing:Engl. 1, 2, 8, 101, 102, 103, 104, 105, 106, 108, 201, 202, 208, 293, 295/391.

Courses in Language Studies:Engl. 111, 112, 113, 210, 211.

Courses in Literature:Engl. 21, 22, 24, 25, 30, 35, 36, 40, 45, 80, 85, 125, 130, 131, 132, 133, 134, 141, 143, 145, 150, 170, 171, 172, 175, 178, 180, 181, 183, 186, 188, 220, 223, 232, 235, 236, 240, 241, 245, 250, 255, 256, 261, 262, 263, 264, 265, 266, 267, 268, 280, 283, 288, 294, 310, 311, 330, 331, 332, 334, 335, 336, 337, 340, 341, 345, 350, 356, 365, 366, 369, 370, 371, 372, 383.

Special Offerings:Engl. 190, 191, 195, 197, 290, 392.

1. *Composition and Rhetoric.* I, II, S. 3 hr. A course in writing non- fiction prose, principally the expository essay. Required of all bachelor's degree candidates unless the requirement is waived under regulations prevailing at the time of admission. **(Note**: Entering freshmen who score 15 or below on the ACT English (or 340 or below on the SAT verbal) may not register for English 1 until they demonstrate requisite skills on the English Department's Writing Placement Test.)

2. *Composition and Rhetoric.* I, II, S. 3 hr. PR: Engl. 1 or equiv. Writing college-level research papers based on argumentative models. Precision in footnotes, bibliographies, usage, punctuation, and stylistics assumed. Required of all bachelor's degree candidates unless the requirement is waived under regulations prevailing at the time of admission.

8. *Intermediate Composition.* I, II. 3 hr. PR: Engl. 1 and 2. Composition for students who wish to develop skills in solving problems of written communication relevant to their career objectives.

21. *British Literature.* I, II, S. 3 hr. A historical introduction and survey from the middle ages through the eighteenth century.

22. *British Literature.* I, II, S. 3 hr. A historical introduction and survey from the late eighteenth century to the present.

24. *American Literature.* I, II, S. 3 hr. A historical introduction and survey from its beginnings to the mid-nineteenth century.

25. *American Literature.* I, II, S. 3 hr. A historical introduction and survey from the mid-nineteenth century to the present.

30. *Themes and Topics in Literature.* I, II, S. 3 hr. Introduction to literature for non-majors. Themes vary, e.g., Faces of Evil, Nature and Literature, Youth and Maturity. All sections are appropriate for non-majors. (Not acceptable toward any departmental requirements for English majors.)

35. *Poetry and Drama.* I, II, S. 3 hr. An introduction to the genres.

36. *Short Story and Novel.* I, II, S. 3 hr. An introduction to the genres.

40. *Introduction to Folklore.* I, II, S. 3 hr. Recognition, collection, and documentation of folklore materials.

45. *Appalachian Experience in Literature.* I, II, S. 3 hr. An introduction to the imaginative literature of the region.

80. *Literature of Black America.* I, II, S. 3 hr. A historical introduction and survey from its beginnings to the present.

85. *Contemporary African Literature.* I, II, S. 3 hr. A survey of contemporary African poetry, drama, and fiction.

101. *Creative Writing: Narration (Short Story).* I, II. 3 hr. Purpose and pattern of the modern short story; study of examples in the current periodicals; special assignments and conferences with individual students on a minimum number of short stories.

102. *Creative Writing: Fiction.* I, II. 3 hr. Workshop course for students to explore further their interests in writing fiction. Emphasis on studying the craft and analyzing the student's own work.

103. *Creative Writing: Poetry.* I, II. 3 hr. Practice in basic techniques of writing poetry. Possibilities and limitations of the poetic genre. Primary emphasis on image, metaphor, and development by association.

104. *Creative Writing: Poetic Forms.* I, II. 3 hr. Practice in the basic techniques of writing open and closed forms of poetry. Primary emphasis on rhythm, sound, tone, and voice.

105. *Business English.* I, II, S. 3 hr. PR: Engl. 1 and 2. (Typing may be required.) Assembling economic and commercial data, and writing business correspondence and reports; covers content, organization, style and conventions of grammar and usage.

106. *Journal Writing.* I, II. 3 hr. PR: Engl. 1 and 2 or equiv. Practice in writing a sequence of structured exercises designed to enhance creativity and awareness. Students also study the theories on which these exercises are based and apply them to the autobiographical writings of others.

108. *Advanced Composition.* I, II. 3 hr. PR: Engl. 1 and 2. Composition for students who wish to further develop their expository and argumentative writing skills.

111. *The English Language.* I, II, S. 3 hr. Study of the structure of contemporary English and how it works: the sound system and word-formation and sentence-formation systems and how they interact to create meaning.

112. *Words and Usage.* I, II. 3 hr. Practical vocabulary building, English grammar and usage. Attention to the derivation, history, and meaning of words, and to the principles of syntax and grammar.

113. *American English.* I, II. 3 hr. Historical survey of the development of American English from the time of colonization to the present. Attention to social, cultural, economic, and political forces that have influenced the development of American English. Emphasis on the Appalachian dialect.

125. *World Literature.* I, II. 3 hr. Selected readings in the works of authors of world literature both ancient and modern.

130. *Biography and Autobiography.* I, II. 3 hr. Biography and autobiography as a genre; representative works chosen for their literary value and their interest and relevance in contemporary life; figures in the arts, sciences, business, and public life.

131. *American Fiction.* I, II. 3 hr. Reading of short stories and novels by American authors of the nineteenth and twentieth centuries.

132. *Poetry. I,* II. 3 hr. Appreciation and enjoyment of poems through critical and analytical reading. Studies in the various types of poetry, and of the language, imagery, and techniques of poetic expression.

133. *The Short Story.* I, II. 3 hr. The short story's structure, history, and contemporary forms.

134. *Modern Drama.* I, II. 3 hr. World drama from Ibsen to the present.

135. *British Fiction.* 3 hr. Short stories and novels by representative British authors. 3 hr. lec.

141. *American Folklore and Culture.* I, II, S. 3 hr. PR: Engl. 40 or consent. Various aspects of folklore from the American Indian, early settlers, the American Negro, the immigrant, and occupational groups. Influence of folklore on American culture.

143. *Modern Continental Novel.* I, II. 3 hr. Discussion and analysis of continental novels of the twentieth century.

145. *Appalachian Fiction.* I, II, S. 3 hr. Reading of short stories, novels, and other narratives by Appalachian authors.

150. Shakespeare. I, II. 3 hr. Twelve of Shakespeare's most important plays.

170. *Modern Literature.* I. 3 hr. British and American poetry, drama, and fiction of the period from 1900 to 1930.

171. *Modern Literature.* II. 3 hr. Cont. of Engl. 170 from approximately 1930 to 1960.

172. *Contemporary Literature.* I, II, S. 3 hr. An examination of the significant literature written since 1960 in England and America. Poetry, drama, and fiction. Selections will vary depending on the instructor.

175. *Science Fiction and Fantasy.* I, II, S. 3 hr. A study of the history and nature of science fiction from H. G. Wells to the present, with special attention to those features of prose narration that science fiction shares

178. *Popular American Culture.* I. 3 hr. A survey of modern popular American culture from 1940 to the present with special emphasis on popular literature, music, television, movies, radio in its golden age, and comic books.

180. *Literature of the Old Testament.* I, II. 3 hr. Various types of literature exemplified in the Old Testament, read for their intrinsic merit and for their historical and cultural significance. Continued in Engl. 181.

181. *Literature of the New Testament.* I, II. 3 hr. Contents of the Old Testament Apocrypha and New Testament, their literary quality, with consideration of historical relations and of relationships of the several writers represented.

183. *Study of Selected Authors.* I, II, S. 3 hr. (May be repeated with a change in course content for a maximum of 9 credit hours.) Study of the works of one or more major authors.

186. *Black American Fiction.* I, II. 3 hr. Reading of novels and short stories by black American authors from 1890 to the present.

188. *Images of Women in Literature.* I, II. 3 hr. Representative literary works studied against backdrop of social and historical documents to examine effect of images of women in literature on self-image of women today.

190. *Teaching Practicum.* I, II, S. 1-3 hr. Teaching practice as a tutor or assistant in composition, literature, or business English.

191. *Special Topics.* I, II, S. 1-3 hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

194. *Professional Field Experience.* I, II, S. 1-12 hr. PR: Consent. Prearranged experimental learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development. (Pass/Fail grading.)

195. *Seminar.* I, II, S. 1-3 hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

197. *Honors.* I, II, S. 1-3 hr. PR: Consent. Independent reading, study or research.

201. *Creative Writing Workshop: Fiction.* I, II. 3 hr. Advanced workshop in creative writing for students seriously engaged in writing fiction.

202. *Creative Writing Workshop: Poetry.* I, II. 3 hr. Advanced workshop in creative writing for students seriously engaged in the writing of a major group of poems.

208. *Scientific and Technical Writing.* I, II. 3 hr. PR: Engl. 1 and 2. Writing for scientific and technical professions. Descriptions of equipment and processes; reports and proposals; scientific experiments; interoffice communications; articles for trade and research journals.

210. *Structure of the English Language.* I, II. 3 hr. Historical, comparative, and descriptive grammar, together with an introduction to English linguistics.

211. *History of the English Language.* I, II. 3 hr. Study of the nature of the language; questions of origins, language families, development, relationships of English as one of the Indo-European languages.

220. *American Poetry.* I, II. 3 hr. Major American poets of the nineteenth and twentieth centuries.

223. *Modern American Poetics.* I, II. 3 hr. A close study of those poets who have shaped the aesthetics of contemporary American poetry.

232. *Literary Criticism.* I, II. 3 hr. Literary criticism from Aristotle to modern times.

235. *American Drama.* I, II. 3 hr. Representative American dramas and history of theatre in America.

236. *Tragedy.* I, II. 3 hr. Masterpieces of tragedy from Greek times to modern, with consideration of changing concepts of tragedy and of ethical and ideological values reflected in works of major tragic authors.

240. *Folk Literature.* I, II. 3 hr. The folk ballad, its origin, history, and literary significance, based on Child's collection and on American ballad collections.

241. *Folk Literature of the Southern Appalachian Region.* I, II. 3 hr. Traditional literature of the southern Appalachian region, including songs, prose, tales, languages, customs, based on material collected in the region— especially in West Virginia.

245. *Studies in Appalachian Literature.* I, II, S. 3 hr. Studies of authors, genres, themes, or topics in Appalachian literature.

250. *Shakespeare's Art.* I, II, S. (Alternate Years.) 3 hr. Special studies in Shakespeare's tragedies, comedies, and/or history plays, with some attention given to his non-dramatic poetry. With emphases varying from year to year, studies may include textual, historical, critical, and dramaturgical- theatrical approaches.

255. *Chaucer.* I, II. 3 hr. Early poems, *Troilus and Criseyde*, and *The Canterbury Tales.* In addition to an understanding and appreciation of Chaucer's works, the student is expected to acquire an adequate knowledge of Chaucer's language.

256. *Milton.* I, II. 3 hr. All of Milton's poems and a few selected prose works.

261. *Sixteenth Century Prose and Poetry.* I, II. 3 hr. Studies from Caxton to Bacon, from Skelton to Shakespeare.

262. *Seventeenth Century Prose and Poetry.* I, II. 3 hr. Studies from Donne to Dryden.

263. *Literature of the Eighteenth Century.* I, II. 3 hr. Literature of the period 1660-1744 in relation to social, political, and religious movements of the time. >

264. *Literature of the Eighteenth Century.* I, II. 3 hr. Continuation of Engl. 263, covering the latter half of the century. May be taken independently of Engl. 263.

265. *The Romantic Movement.* I, II. 3 hr. A survey of the works of the major British Romantic writers along with an introduction to works of scholarship in British Romanticism.

266. *American Romanticism.* I, II. 3 hr. Writings of Ralph Waldo Emerson, Henry David Thoreau, and Nathaniel Hawthorne. A study of relations of these men to the history of their own time; their contributions to American thought and art.

267. *Victorian Poetry.* I, II. 3 hr. Major Victorian poets—Tennyson, Browning, Arnold, Rossetti, Morris, Swinburne, Fitzgerald—and a few of the later Victorian poets.

268. *Modern British Poetry.* I, II. 3 hr. British poetry from 1880 to present, including the Decadents, Counter-Decadents, Hopkins, Housman, Hardy, the Georgians, the Imagists, World War I poets, Yeats, Eliot, the Auden Group, and post-World War II poets.

280. *Southern Writers.* I, II. 3 hr. Twentieth-century Southern essayists, poets, short-story writers, and novelists in relation to ideological background.

283. *Study of Selected Authors.* I, II. 3 hr. (May be repeated with a change in course content for a maximum of 9 credit hours.) Study of the works of one or more major authors.

288. *Women Writers in England and America.* I, II. 3 hr. Syllabus may vary from year to year to include women writers in a particular country, historical period, or genre; or writing on a particular theme.

290. *Independent Study.* I, II. 1-3 hr. (With departmental consent, may be repeated for a maximum of 9 credit hours.) PR: Departmental consent. Individual study of literary, linguistic, and writing problems.

293. *Practicum in Teaching Composition.* I. 1 hr. PR: Engl. 108, 295. Designed to give prospective English and language arts teachers supervised practical experiences in individual writing tutorials.

294. *Fiction for Adolescents.* II. 3 hr. Designed for prospective teachers of English and language arts. Course focuses on recent fiction for adolescents as well as on traditional literature appropriate to the needs, interests, and abilities of youth. Evaluative criteria emphasized.

295. *Approaches to Teaching Composition.* I. 3 hr. (May not be taken for both undergraduate and graduate credit.) Surveys attitudes toward and techniques of teaching writing in elementary and secondary schools. Provides experiment in class with methods of teaching writing.

Entomology (Ento)

152. *Forest Entomology.* II. 3 hr. PR: F. Man. 211. (This course is primarily designed for forestry students.) Relationships between insects and the forest; recognition and management of important species.

201. *Apiculture.* II. 3 hr. PR: Biol. 1 and 3 and 2 and 4 or consent. Development, physiology, and behavior of the honey bee with emphasis on colony management, pollination of crops, diseases of bees, properties of honey and beeswax, and marketing of honey bee products.

202. *Apiculture Laboratory.* II. 1 hr. PR: Concurrent or previous enrollment in Ento. 201. Identification and anatomy of honey bees, assembly and use of beekeeping equipment, field management of honey bees, examination for diseases and pests, production of queens and nuclei. (1 hr. lab.)

204. *Principles of Entomology.* I. 4 hr. PR: Biol. 1 and 3 and 2 and 4 or equiv. Basic course dealing with the anatomy, morphology, physiology, reproduction, systematics, ecology, and management of insects.

210. *Insects Pests in the Agroecosystem.* I. 3 hr. PR: Ento. 204 or consent. Life cycle, damage, and economic impact of pestiferous insects in the agroecosystem. Included are insect pests of agricultural and ornamental plants, stored products, structures, and livestock. 2 lec., 1 lab.

212. *Pest Management.* II. 3 hr. Ento. 204 or consent. An in-depth look at current problems and solutions in controlling insect pests in an environmentally compatible manner. Management techniques include cultural, mechanical, physical, biological, regulatory, and chemical practices. 3 lec.

Environmental Microbiology (EnvMi)

141. *General Microbiology.* I, II. 4 hr. PR: Chem. 15. Introductory morphological, cultural, and physiological characteristics of microorganisms; application of microbiology to agriculture, home economics, and health.

201. *Environmental Microbiology.* II. 4 hr. PR: Ag. Micro. 141 or consent. Microbiology as applied to soil, water, wastewater, sewage, air, and the general environment. Occurrence, distribution, ecology, and detection of microorganisms in these environments.

Family Resources (Fam. R.)

191. *Undergraduate Special Topics.* I, II, S. 1-4 hr. per sem.; max. 9 hr. PR: Consent.

194. *Undergraduate Community Internship/Practicum.* I, II, S. 1-12 hr. PR: H.E.Ed. 281 or consent. Supervised participation in the family resources field in settings such as: business and industry; government bureaus; communication and media; social service and health agencies.

195. *Undergraduate Seminar.* I, II, S. 1-4 hr. per sem.; max. 9 hr. PR: Written consent.

Finance (Fin.)

Prerequisites for Upper-Division, Undergraduate Business Courses: To enroll in any upper-division, undergraduate business course offered by the College, the undergraduate student must have completed the following prerequisite courses: six hours of principles of economics; six hours of principles of accounting; three hours of statistics, Math. 28 or Math. 14; and three hours of calculus (Math. 128 or Math. 15) and have attained a 2.5 grade-point average. In addition, the student must have successfully completed six hours of composition and rhetoric. Exceptions to the above policy must be approved by the chairperson of the department offering the course.

111. *Business Finance.* 3 hr. PR: Acctg. 51 and 52. Activities of the finance manager in the planning, acquisition, and administration of funds used in a business enterprise.

112. *Intermediate Finance.* 3 hr. PR: Fin. 111 with a grade of B or better. Continuation of Fin. 111; use of computers to help solve extended problems and/or short cases.

115. *General Insurance.* 3 hr. Theory of risk and its application to insurance; principles underlying insurance—life, property, casualty, fire, and surety.

150. *Investments.* 3 hr. PR: Fin. 111 or consent. Investment analysis and management for the individual and the financial institution.

151. *Financial Institutions.* 3 hr. PR: Fin. 111 and Econ. 55. The role of financial institutions in our nation's financial markets and the economy. Analysis of interest rate, financial markets and federal revenue policy.

161. *Real Estate.* 3 hr. Principles and practices of real estate business.

200. *Special Topics.* 1-4 hr. PR: Fin. 111, or Fin. 311, or consent. Special topics relevant to finance.

(Maximum of nine semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward bachelor's and master's degrees.)

212. *Working Capital Management.* 3 hr. PR: Fin. 111 or Fin. 311, Fin. 112, Econ. 125. Management of current assets and liabilities. Topics include the management of cash, marketable securities, accounts receivable, inventories, trade accounts payable, and short-term bank borrowings. Decision models are used extensively.

216. *Risk Management.* 3 hr. PR: Fin. 115 or consent; PR or Coreq.: Fin. 112. Transferable risks with which the entrepreneur must deal. Emphasis on the process by which decisions are made for handling these risks, including an examination of contributions and limitations of insurance system.

217. *Employee Benefit Plans.*3 hr. PR:Fin.115 or consent. Use, design and regulation of group life insurance, health care and pensions, including their federal tax consequences. Study of the available contracts in each area and financing alternatives and practices.

218. *Life Insurance and Estate Planning.* 3 hr. PR: Fin. 115 Principles of life and health insurance protection; application of life insurance to individual, family, business, and societal needs; study of trusts, wills and estates, integrating of income programming into estate management.

219. *Property and Liability Insurance* . 3 hr. PR: Fin. 115. Study of the use and production of property and liability insurance, including evaluation of insurance contracts and current insurance practices; legal and regulatory environment affecting use and production of insurance.

220. *Social Insurance.* 3 hr. PR: Fin. 115 or consent. Our social and political efforts to provide economic security for the general public. An examination of the parallel developments of private insurance.

250. *Security Analysis and Portfolio Management.* 3 hr. PR: Fin. 150 or consent; PR or Coreq.: Fin. 112. The systematic selection, assessment, and ranking of corporate securities in a portfolio framework through a synthesis of fundamental analysis, technical analysis, and random walk.

251/331. *Bank Management.* 3 hr. PR: Fin. 111 or consent; PR or Coreq.: Fin. 112.

(May not be taken for both undergraduate and graduate credit.) Management of bank funds. Principles of organization lending and investment. Policy relationships to bank productivity, organization, and profitability; preparation of financial reports; management of a simulated bank in a changing environment.

252. *Advanced Bank Management.* 3 hr. PR: Fin. 251 or consent. An advanced course in commercial banking involving problems of management of the money position, loan and investment portfolio and capital adequacy. The student simulates actual bank operation, conducts case studies, and analyzes bank performance.

261. *Real Estate Appraising.* 3 hr. PR: Fin. 161. The appraisal problem. Plan the approach, acquire, classify, analyze and interpret data into an estimate of value by the use of the cost or replacement approach, income approach, and market approach.

262. *Real Estate Finance.* 3 hr. PR: Fin. 111, or Fin. 311, 161 or consent. How financing, the tax system, and supply and demand interact to create values which, when coupled with investment decision, leads to choosing an investment strategy in real estate.

263. *Real Estate Investments/Land Development.* 3 hr. PR: Fin. 161 or consent. Designed to investigate various types of real estate investments including apartments, office buildings, shopping centers, and residential land developments with emphasis on financial analysis, profitability analysis, and rates of return.

290. *Advanced Finance.*3 hr. PR: 15 hours in finance including Fin. 112. Integrative course in finance to be taken during the final semester before graduation.

299. *Independent Study.* 1-3 hr. PR: Consent. Students will develop and complete a program of specialized studies under the supervision of a cooperating instructor.

Food Science (Fd Sc)

107. *Milk and Public Health.* I. 3 hr. Food value of milk and its production andprocessing in relation to public health. 1 lab. (Offered in Fall of odd years.)

112. *Dairy Technology.* II. 3 hr. Introductory. Composition and properties of milk and milk products, butterfat testing, manufacture of dairy products. 1 lab. (Offered in Spring of odd years.)

130. *Market Milk Products and Frozen Desserts.* I. 4 hr. Assembling, processing, packaging, storing and merchandising dairy products. 1 lab. (Offered in Fall of even years.)

134. *Judging Dairy Products.* II. 2 hr. A laboratory course in evaluating and judging dairy products. 2 labs.

166. *Meat Technology.* I. 3 hr. Emphasis on techniques of slaughtering, cutting, breaking, manufacturing, inspecting, and grading beef, veal, pork, lamb, and poultry meat and muscle food products; meat plant design, technology, sanitation, operation, and management.

167. *Meat Science.* II. 3 hr. PR: Fd. Sc. 166, Biol. 2 and 4, and Chem. 12 or equiv. Emphasis on basic physical, chemical, anatomical, and nutritional characteristics of muscle foods; methods of analysis and quality assurance in processing muscle foods.

267. *Advanced Meat Science.* I, S. 3 hr. PR: Fd. Sc. 167. Theoretical and experimental aspects of meat science, meat product/process systems, and the quantitative biology of muscle systems used for food.

Foreign Literature in Translation (FLIT)

13. *Introduction to French Literature.* II. (Alternate Years.) 3 hr. Major writers and representative movements in French literature from its beginning to the present.

14. *Introduction to German Literature.* I. (Alternate Years.) 3 hr. Survey of German literature with selected readings of prose, poetry, and drama from the Enlightenment to the present.

15. *Introduction to Spanish Literature.* I. (Alternate Years.) 3 hr. Reading and discussion of representative Spanish novels, plays, and epic poetry from the Middle Ages to the twentieth century. Special emphasis on Don Quixote, its roots and its place in the development of Western culture.

16. *Introduction to Latin American Literature.* II. (Alternate Years.) 3 hr. Reading and discussion of representative works of twentieth-century Latin American writers.

17. *Introduction to Russian Literature.* I. (Alternate Years.) 3 hr. Major writers and representative movements in Russian literature from its beginning to the present.

18. *Introduction to Italian Literature.* II. (Alternate Years.) 3 hr. Italian literary masterpieces will be examined in historical perspective and in relation to the European mainstream.

111. *Italian Literature in Translation 1.* I. 3 hr. Selected Italian works from the twelfth century to the end of the eighteenth century. Readings and discussion in English.

112. *Italian Literature in Translation 2.* II. 3 hr. Selected Italian works from the nineteenth and the twentieth centuries. Readings and discussion in English.

121. *Latin Literature in Translation 1.* I. 3 hr. Survey of Latin literature in translation.

122. *Latin Literature in Translation 2.* II. 3 hr. Survey of Latin literature in translation.

131. *Greek Literature in Translation 1.* I. 3 hr. Survey of Greek literature in translation.

132. *Greek Literature in Translation 2.* II. 3 hr. Survey of Greek literature in translation.

141. *Spanish Literature in Translation 1.* I. 3 hr. Selected Spanish works from the twelfth century to the end of the eighteenth century. Readings and discussion in English.

142. *Spanish Literature in Translation 2.* II. 3 hr. Selected Spanish works from the nineteenth and the twentieth centuries. Readings and discussion in English.

151. *Spanish American Literature in Translation 1.* I. 3 hr. Selected Spanish American works from the sixteenth century to the end of the nineteenth century. Readings and discussion in English.

152. *Spanish American Literature in Translation 2.* II. 3 hr. Selected Spanish American works from the nineteenth and the twentieth centuries. Readings and discussion in English.

161. *French Literature in Translation 1.* >. 3 hr. Selected French works from the Middle Ages to the end of the eighteenth century. Readings and discussion in English.

162. *French Literature in Translation 2.* II. 3 hr. Selected French works from the beginning of the nineteenth century to the present. Readings and discussion in English.

166. *Francophone Literature in Translation.* II. 3 hr. Works by French- speaking authors from Africa and the Caribbean. French majors will read selections in the original.

171. *Brazilian Literature in Translation.* II, S. 3 hr. Survey of Brazilian literary masterworks in English translation concentrating heavily on prose forms (novel, novelette, short story, play) dating from the mid-nineteenth century.

181. *German Literature in Translation 1.* I. 3 hr. Selected German works from 800 A.D. to the period of Naturalism. Readings and discussion in English.

182. *German Literature in Translation 2.* II. 3 hr. Selected German works from the period of Naturalism to the present. Readings and discussion in English.

188. *Russian Literature in Translation 1.* 3 hr. Major works of Russian authors from the beginning to 1880, including those of Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, and Tolstoy. Russian majors will read selections in the original.

189. *Russian Literature in Translation 2.* 3 hr. Continuation of FLIT. 188. Major literature of Russia/Soviet Union from 1880 to the present. Russian majors will read selections in the original.

191. *Special Topics.* 1-3 hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

211. *Chinese Literature in Translation.* I. 3 hr. Survey of selected works of Chinese literature from ancient times through the eighteenth century.

221. *Japanese Literature in Translation.* II. 3 hr. Survey of selected works of Japanese literature from ancient period to the mid-nineteenth century and an introduction to a few works of the modern period.

241. *Women Writers of Spain.* 3 hr. Major women writers of Spain from the earliest extant manuscripts to the present; focus on 20th century works. Spanish majors will read selections in the original.

263. *French Women Writers.* 3 hr. Selected works of French women writers. 3 hr. lec.

292. *Pro-Seminar.* I, II, S. 1-6 hr.* PR: 6 hr. upper-division literature courses or consent. Special topics.

Forest Hydrology (F. Hyd.)

41. *Environmental Influences in Forestry.* I. 3 hr. PR: Phys. 1, 2. An introduction to theinfluences of forests and forestry practices on physical processes that affect the environment.

243. *Forest Water Quality.* 3 hr. PR: Forestry major or consent. (This course will not substitute for FH 244). Influences of natural forest cover, forest land uses, and harvesting practices on selected water quality parameters that can be detected in simple field and laboratory tests.

244. *Watershed Management.* II. 3 hr. PR: F. Man. 12, 211. (Primarily for forest management majors.) Influences of silvicultural practices and forest management activities on the hydrology of forested catchments.

Forest Management (F Man)

12. *Forest Ecology.* I, II. 3 hr. PR: Biol. 51. Forest and environment factors; site and type characteristics.

122. *Forest Mensuration.* II. 4 hr. PR: Math. 15, Stat. 101. Estimating volume and growth of trees and forest stands with emphasis on the mathematical and statistical techniques involved. Laboratories include practical field experience.

132. *Farm Woods Management.* II. 3 hr. Students majoring in forest resource management and wood industry may not take this course for credit. Characteristics of forest trees; management of farm woods for timber, wildlife, watershed protection, and recreation; measuring and marketing farm timber; plantation establishment.

151. *Forest Fire Protection.* I. 2 hr. Prevention, detection, and control of wildfires. Forest fuels, fire weather, and wildfire behavior. Use of fire for forest management purposes.

200. *Forest Measurement, Interpretation, Wildlife Management.* S. 5 hr. PR: Biol. 51; C.E. 5; F. Man. 122. (Course will be taught during four consecutive 6-day weeks.) Application and study of forest resources practice with emphasis on field problems.

201. *Forest Resources Management Southern Trip.* S. 1 hr. PR: F. Man. 200 or consent. One-week trip to the Southern Pine Region to observe forest management practices on private and public lands.

211. *Silvicultural Systems.* I. 4 hr. PR: Forestry major or consent; F. Man. 12. Principles of regeneration cuttings, intermediate cuttings, and cultural operations, with their application of forest stands.

213. *Regional Silviculture.* I. 2 hr. PR: Forestry major or consent. F. Man. 12; PR or Conc.: F. Man. 211. Major forest types of the United States: their composition, management, problems, and silvicultural treatment.

215. *Principles of Artificial Forestation.* II. 3 hr. PR: Forestry major or consent; F. Man. 12. Seeding and planting nursery practice; phases of artificial regeneration.

216. *Forest Genetics and Tree Improvement.* II. 3 hr. PR: Forestry major or consent; Gen. 272, or equiv., or consent. Forest genetic principles and their application to forest tree improvement, including crossing methods, selection systems, and other techniques.

222. *Advanced Forest Mensuration.* II. 3 hr. PR: Forestry major or consent; F. Man. 122. Measurement of growth and yield; statistical methods applied to forest measurement problems.

230. *Principles of Forestry Economics.* II. 4 hr. PR: Econ. 54 and 55 or equiv. Production, distribution, and use of forest goods and services. Emphasis on analytical methods and problem solving techniques in the economic aspects of forestry.

233. *Forest Management.* I. 4 hr. PR: Summer Camp; PR or Conc.: Forestry major or consent; F. Man. 211. Principles of sustained yield forest management. Organization of forest areas, selection of management objectives, application of silvicultural systems, and regulation of cut. Forest management plan.

234. *Forest Resources Management Planning.* I, II. 3 hr. PR: Forestry major or consent; senior standing. Analysis and planning for management of forest resources. Development of a management plan for an actual forest tract.

Forestry (For)

1. *Professional Orientation.* I. 1 hr. (Required only for students who rank as freshmen in forestry.) Survey of degree options in the Division of Forestry and related career and professional opportunities.

5. *Dendrology.* I. 3 hr. Classification, identification, and silvical characteristics of North American forest trees; laboratory emphasis on woody plants native to West Virginia.

10. *Forest Meteorology.* II. 3 hr. PR: Math 3 or 4 or consent. Introduction to meteorology and climatology with emphasis on forest/atmosphere interactions.

140. *West Virginia's Natural Resources.* I, II, S. 3 hr. Survey of policies and practices in development and use of soil, water, forest, wildlife, mineral, and human resources in West Virginia.

170. *Problems in Forestry, Wood Science, Wildlife, or Recreation.* I, II, S. 1-4 hr. PR: Forestry senior or consent.

220. *Forest Policy and Administration.* I and II. 3 hr. PR: Upperclass forestry major or consent. Forest policy in the United States; important federal and state laws; administration of public and private forests; problems in multiple-use forestry.

226. *Remote Sensing of Environment.* II. 2 hr. PR: Math. 3, 4. Measurement and interpretation of natural resources and environment from photography, radar, infrared, and microwave imagery.

French (Frch)

1. *Elementary French.* I, II. 3 hr.

2. *Elementary French.* I, II. 3 hr. Continuation of Frch. 1.
3. *Intermediate French.* I, II. 3 hr. PR: Frch. 1, 2, or equiv.

4. *Intermediate French.* I, II. 3 hr. PR: Frch. 3 or consent. Continuation of Frch. 3.

10. *Intensive Elementary French.* I. 6 hr. The equivalent of Frch. 1 and 2 combined into one course.

11. *Intensive Intermediate French.* II. 6 hr. PR: Frch. 1 and 2 or 10 or consent. The equivalent of Frch. 3 and 4 combined into one course.

21. *Elementary French: Reading.* I. 3 hr. Beginning French with concentration on reading comprehension.

22. *Elementary French: Reading.* II. 3 hr. PR: Frch. 21 or equiv. Cont of Frch. 21.

33. *Intermediate French: Cultural Emphasis.* I. 3 hr. PR: Frch. 1 and 2, or equiv.

34. *Intermediate French: Cultural Emphasis.* II. 3 hr. PR: Frch. 3, 33, or equiv. Continuation of Frch. 33.

101. *Commercial French.* I. 3 hr. PR: Frch. 4 or equiv. Introduction to the use of the French language in French business practices, letterwriting, and the study of economic geography.

102. *Advanced Commercial French.* II. 3 hr. PR: Frch. 101 or consent. Continuation of Frch. 101; preparation for international examination of Paris Chamber of Commerce.

103. *Advanced French.* I. 3 hr. PR: Frch. 3, 4, consent.

104. *Advanced French.*II. 3 hr. PR: Frch. 103 or consent.

109. *Advanced French.* I. 3 hr. PR: Frch. 104 or consent.

110. *Advanced French.* II. 3 hr. PR: Frch. 109 or consent.

111. *French Literature from the Middle Ages to the Eighteenth Century.* I. 3 hr. PR: Two years of college French or equiv. or consent.

112. *French Literature from the Eighteenth Century to the Contemporary Period.* II. 3 hr. PR: Two years of college French or equiv. or consent.

115. *The Classical School.* I. 3 hr. PR: 12 hr. of French or equiv.

118. *Literature of the Nineteenth Century.* I. 3 hr. PR: 12 hr. of French or equiv.

191. *Special Topics.* I, II, S. 1-4 hr.* PR: Consent.

203. *Conversational French.* I. 3 hr. PR: Frch. 110 or consent. Intensive spoken French.

217. *French Civilization.* II. 3 hr. PR: 12 hr. of French.

221. *The Romantic Movement.* I. 3 hr. PR: 18 hr. of French or consent.

222. *French Realism.* II. 3 hr. PR: 18 hr. of French or consent.

229. *Literature of the Sixteenth Century.* I. 3 hr. PR: 18 hr. of French or consent.

231. *Phonetics and Pronunciation.* II. 3 hr. PR: 12 hr. of French or equiv.

232. *Literature of the Eighteenth Century.* 3 hr. PR: 18 hrs. of French or consent. Survey of major literary works of eighteenth century France.

292. *Pro-Seminar.* I, II, S. 1-6 hr.* PR: 18 hr. of French or consent. Special topics.

Freshman Program (Engr)

1. *Freshman Engineering Design.* 3 hr. PR or Coreq.: Math. 14. Introduction to the concepts of design (analysis, synthesis, evaluation), report writing, conservation of energy, calculation techniques, and engineering sketching. 2 hr. lec., 3 hr. lab.

2. *Freshman Engineering Design and Analysis.* 3 hr. PR or Coreq: Math. 14 or consent. Introduction to engineering profession, engineering concepts, and FORTRAN programming with emphasis on solutions to engineering problems.

General Engineering (Engr)

191. *Special Topics.* 1-6 hr. PR or Coreq.: Junior standing; consent. Special topics in fields of general engineering, engineering analysis and design, and engineering education.

General Physical Education (G.P.E.)

1, 2. *General Program.* I, II, S. 1 hr. Activities are: Aerobics; Aquatics Aerobics; Angling and Casting; Badminton; Basketball; Billiards; Conditioning; Dance (Clogging, Square, Folk); Flag Football; Frisbee; Golf; Gymnastics; Horsemanship; Ice Skating; Jogging; Martial Arts (Aikido, Karate, Kung Fu, Self Defense, Tai Chi); Paddleball; Racquetball; Riflery; Slow Pitch Softball; Snow Skiing; Soccer; Squash; Table Tennis; Tennis; Volleyball; Water Safety Instructorship; and Weight Training.

7. *Archery.* I, II. 1 hr.

11. *Beginning Swimming.* I, II, S. 1 hr. Designed for those who do not swim at all or cannot swim a pool length.

12. *Intermediate Swimming.* I, II, S. 1 hr. Designed for those who have minimal skills in swimming and who wish to improve basic strokes.

15. *Lifeguard Training.* 1 hr. PR: Swimming skill. Knowledge and skills for aquatic emergencies; leads to American Red Cross Certification. 1 hr. lec., 1 hr. lab.

18. *Advanced Swimming.* I, II, S. 1 hr. A course to develop rhythm, polish, effectiveness, and endurance in the nine styles of swimming.

19. *Orientation to Scuba.* I, II, S. 1 hr. PR: Advanced swimming skill. A beginning course for those with advanced swimming skills. Includes skin diving, safety practices, physics of diving, and elementary work with self- contained, underwater breathing apparatus.

20. *Canoeing.* I, II, S. 1 hr. PR: Swimming skill. Types of canoeing strokes, life-saving techniques for recreational canoeing.

22. *Slimnastics.* I, II, S. 1 hr. Exercises, fitness, weight control, and conditioning activities.

23. *Backpacking.* I, II, S. 1 hr. Knowledge of equipment, maps and compass skills, packing techniques and safety procedures. (Long hikes and overnight campouts are required.)

24. *Bowling.* I, II, S. 1 hr. Knowledge and techniques of bowling. (Not for skilled bowlers.)

25. *Fencing.* I, II. 1 hr.

40. *Early Childhood Activities.*2 hr. For classroom teachers specializing in programs for pre-school and nursery children. Emphasis on developmental motor patterns and fundamental movements. Students may choose laboratory experience in the gymnasium or pool environments of the KinderSkills Program.

41. *Movement Education and Rhythms.* I, II, S. 1 hr. Basic movement skills, games, and simple rhythms appropriate for young children.

42. *Elementary Sports Skills.* I, II, S. 1 hr. Basic skills and lead-up games for children.

Genetics (Gen)

171. *Principles of Genetics.* II. 4 hr. PR: 8 hr. biological science. The fundamentals of inheritance.

290. *Crop Breeding.* II. 3 hr. PR: Gen. 171 or 321. Methods and basic scientific principles involved in improvement of leading crops through hybridization, selection, and other techniques. (Offered in Spring of even years.)

Geography (Geog.)

1. *Introduction to Geography.* I. 3 hr. Basic principles of the discipline, including maps, climate, physiography, urban, economic, political, and cultural geography. (Not open to students who have completed either Geog. 7 or 8.)

2. *World Regions.* II. 3 hr. Comparison and relationships of world regions. Geographical perspectives of contemporary global problems. Developing regions contrasted with modernized regions and the consequences of their interactions.

7. *Physical Geography.* I, II. 3 hr. An introduction to the various global environmental systems operating on the earth's surface and examination of human interaction with these natural processes.

8. *Human Geography.* I, II. 3 hr. Introduction to the geographical dimension in human behavior and the human-altered landscape including social, demographic, economic, and political attributes of societies.

99. *Orientation to Geography.* 1 hr. For majors, premajors, and potential majors; discussion of the discipline, curriculum requirements, areas of specialization, internships and career opportunities. 1 hr. lec. (Pass/Fail only.)

105. *Resource Utilization and the Environment.* I, S. 3 hr. An analysis of the problems associated with natural resource utilization in the United States. The functional concept of resources is defined and evaluated in terms of land-use planning, pollution abatement, and alternate resource utilization strategies.

107. *Weather and Climate.* I, II. 3 hr. Processes of weather and patterns of climate and their significance to people.

109. *Economic Geography.* II. 3 hr. Earth's land use patterns and interactions that result from our economic activities. Includes the analysis of industrial location, mineral exploitation, and agricultural patterns.

110. *Urban Geography.* I. 3 hr. Introduction to the geography of the city incorporating consideration of urban systems and city-region linkages, patterns and processes of urban land use, the social geography of the city, and contemporary urban problems.

115. *Population Geography.* 3 hr. Study of the geographic distribution of population and population characteristics including density, age, fertility, mortality, and settlement patterns. Problems of migration and population/resource issues also will be covered, with an emphasis on developing countries. (Fall of odd years.)

127. *Map and Image Interpretation.* 2 hr. PR: Geol. 1. Relation of earth structure and history to land forms as shown on topographic maps. (Also listed as Geol. 127.)

140. *United States and Canada.* I. 3 hr. Regional study of the United States and Canada emphasizing such geographic features as climate, natural vegetation, topography, natural resources, population distribution and trends, agriculture, manufacturing, transportation systems, and regional culture.

141. *Geography of Europe.* Alternate yrs. 3 hr. PR: Geog. 8. Regional characteristics, problems of development, and human ecology of the area.

143. *Geography of Africa.* I or II. 3 hr. Systematic and regional characteristics and geographic problems of political, social, and economic development.

144. *Latin America.* I or II. 3 hr. Regional study of Central America, the West Indies, and South America emphasizing such physical and human geographical factors as natural resources, climate, population characteristics and trends, culture, economic development, and political patterns.

145. *Geography of Asia.* 3 hr. Study of the physical and cultural geographic patterns of Asia with emphasis on China, Japan, and India.

150. *Transportation Geography.* I. 3 hr. A practical and theoretical approach to transportation systems including an examination of networks, modes, and flows at different geographical scales. Emphasis is placed on transportation as a spatial factor in urban and regional development. (Offered in Fall of even years.)

151. *Introduction to Geographic Informational Systems.* 3 hr. Fundamental principles of geographic information systems (GIS) and spatial data. Exploring applications, data structures, functions, and different GIS approaches. Labs provide experience with software packages. (2 hr. lec., 1 hr. lab.)

200. *Geographic Data Analysis.* 3 hr. Quantitative techniques for collection, classification, and spatial analysis of geographical data with emphasis on map analysis and application of spatial analysis.

201. *Geography of West Virginian and Appalachia.* 3 hr. PR: Geog. 8. Analysis of changing patterns of human use of the physical environment in West Virginia and Appalachia.

202. *Political Geography.* II. 3 hr. Examines the interrelationship between politics and the environment, human territoriality, the political organization of space, geopolitical aspects of the nation-state and international problems.

205. *Environmentalism in the United States.* II. 3 hr. Surveys natural resource exploitation and environmental alteration in the United States from the beginning of European settlement, with consideration of changing natural resource, conservation, and environmental perceptions and policies.

209. *Industrial Geography* . II. 3 hr. PR: Geog. 109 or consent. Introduction to theories and concepts of industrial geography; emphasis on the interdependence of the world economy and spatial patterns of industrial restructuring; case studies from various industrial sectors and regions.

210. *Global Issues: Inequality and Interdependence.* II. (Alt. Years.) 3 hr. PR: Geog. 1 or 2 or 8. Themes of spatial equity and justice in an increasingly interdependent world system. Contemporary issues concerning location, place, movement, and region.

211. *Regional Development.* 3 hr. PR: Geog. 109 or consent. Examination of growth and decline of regions in developed countries, with emphasis on the United States. Practical implementation of regional development policies. 3 hr. lec.

219. *Problems in Geography.* I, II. 1-9 hr. PR: Consent. Independent study or special topics.

220. *Seminar in Geography.* I, II. 1-9 hr. per sem.; max. 15 hr. PR: Consent. Includes separate seminars in urban, economic, physical, behavioral, social, Appalachian, transportation, census, planning, resource, international studies, geographic model building, rural problems, cartography, aging and environment, and energy.

221. *Geomorphology.* II. 3 hr. PR: Geol. 1. (Optional field trip at student's expense.) An examination of the physical processes which shape the surface of the earth, with emphasis on fluvial processes and environmental geomorphology. (Also listed as Geol. 221.)

225. *Urban and Regional Planning.* 3 hr. PR: Geog. 110 or Pol. S. 121 or consent. Explores concepts, techniques, and processes of physical and socioeconomic planning and their application to urban and regional problems.

230. *Rural Land Use.* . 3 hr. PR: Geog. 8. Analysis of the geographic distribution of various land uses in rural areas.

235. *Place and Behavior.* (Alternate Years.) 3 hr. PR: Geog. 8. Changing experience of geographical space over the life cycle as reflected in activity patterns, territoriality, and environmental images; traces environmental design of schools, nursing homes, parks and shopping malls.

251. *Geographic Information Systems Technical Issues.* (Alt. yrs.) 3 hr. PR: Geog. 151. Technical aspects of GIS functions, algorithms, theory of geographical data structures and error handling. Labs require tools, data and macros to construct small GIS. (2 hr. lec., 1 hr. lab.)

252. *Geographic Information Systems Applications.* (Alt. Yrs.) 3 hr. PR: Geog. 151 and Geog. 200. Operational and management issues in planning management analysis, locational decision making, and design and implementation of GIS. Lab project emphasizes student's specialization. (2 hr. lec., 1 hr. lab.)

261. *Cartography.* I, II. 3 hr. An introduction to mapping, including historical developments, coordinate systems, projections, generalization, symbolization, map design, computer-assisted cartography, landform representation, and data manipulation for dot, graduated symbol, chloropleth, and isarithmic maps.

262. *Cartographic Techniques.* II. 3 hr. PR: Geog. 261 or consent. Advanced map construction including positive and negative artwork, darkroom techniques, color and color proofing, and map reproduction.

285. *Methods of Geographic Research.* II. (Alternate Years.) 3 hr. PR: Consent. Geographic analysis as problem-solving activity. Practical experience in field techniques, library research, hypothesis formation and testing, and report preparation and presentation. Students will acquire skills in literary and numerical approaches to geographic data analysis.

290. *Geographical Perspectives on Energy.* II. 3 hr. PR: Consent. A survey of the distribution of finite, renewable, and continuous energy resources and an investigation of the geographical patterns of energy consumption and energy flows. The policy implications of an unequal distribution of energy are evaluated.

295. *Internship.* I, II, S. 1-12 hr. PR: Junior standing and consent. A working internship with an agency or company designed to give the student experience in the practical application of geographic training to specific problems.

299. *Honors Thesis.*I, II, S. 3-6 hr. PR: Departmental consent. Thesis proposal, writing, and defense for students admitted to the Honors Program.

Geology (Geol)

1. *Physical Geology.* I, II, S. 3 hr. Description of composition and structure of earth physical processes which change earth's surface. Geol. 2 not required with Geol. 1. Registration in Geol. 2 meets requirements for 4 hr. credit in a laboratory science in physical geology.

2. *Physical Geology Laboratory.* I, II, S. 1 hr. PR or Conc.: Geol. 1.

3. *Historical Geology.* I, II, S. 3 hr. PR: Geol. 1 or Conc. with consent. Evolution of earth and its inhabitants. (Accompanied by Geol. 4 to meet requirements of 4 hr. credit in a laboratory science in historical geology.)

4. *Historical Geology Laboratory.* I, II. 1 hr. PR or Conc.: Geol. 3.

6. *Fossils and Evolution.* I. 3 hr. PR: Geol. 1 or Biol. 1. Evolutionary history of plants, marine invertebrates, fish, amphibians, reptiles, dinosaurs, birds, and mammals; emphasis on unique contribution of fossil record to evolutionary theory. 2 hr. lec., 1 hr. lab. (Credit cannot be obtained for both Geol. 3 and Geol. 6)

7. *Physical Oceanography.* II. 3 hr. (Not open to upper division geology majors.) The geography and geology of ocean basins and margins, the chemical and physical properties of sea water, and the examination of the source and location of resources in the sea.

127. *Map Interpretation.* I. 2 hr. PR: Geol. 1. Relation of earth structure and history to land forms as shown on topographic maps. (Also listed as Geog. 127.)

151. *Structural Geology.* I. 4 hr. PR: Geol. 1 and 2 or Minerals 2 and Phys. 1 or 11 or consent. Introduction to stress, strain, and rheological behavior of geologic materials. Systematic study of types of structures, their field relationships and their development.

152. *Topics in Structural Geology.* I. 4 hr. PR: Geol. 1, Geol. 2, Geol. 184, Phys. 1 or

11, Math. 15, or consent. (One-day field trip required at student's expense.) Systematic study of types of structures involving their field occurrence. Introduction to the mechanistic aspects of the formation of structures. Comparative studies of structures.

184. *Mineralogy.* I. 4 hr. PR: Geol. 1, and Chem. 15 or conc. Elements of crystallography and systematic study of minerals. Identification of minerals in hand specimen by their physical properties.

185. *Introductory Petrography.* II. 4 hr. PR: Geol. 184. Introduction to the study of igneous, sedimentary and metamorphic rocks, including mineralogy, processes of formation, tectonic setting, and description and identification of rocks in hand specimen.

201. *Physical Geology for Teachers.* I, II. 3 hr. (Credit cannot be obtained for both Geol. 201 and Geol. 1.) PR: High school teaching certificate and consent. Composition and structure of earth and the geologic processes which shape its surface.

221. *Geomorphology.* II. 3 hr. PR: Geol. 1. Optional field trip at student's expense. An examination of the physical processes which shape the surface of the earth with emph asis on fluvial processes and environmental geomorphology. Also listed as Geog.211.

222. *Glacial Geology.* I. 3 hr. PR: Geol. 1. (Optional field trip(s) at student's expense.) Introduction to glaciology and glacial geology, with emphasis on topographic form and the nature of glacial deposits. The Quaternary history of North America is stressed.

228. *Photogeology.* II. 3 hr. PR: Geol. 127, 152, or consent. Instruction in basic and advanced techniques of air-photo interpretation.

231.*Invertebrate Paleontology.* I. 4 hr. PR: Geol. 3, 4, 184, and Stat. 101 or consent. (Weekend field trip required at student's expense.) Invertebrate fossils: biologic classification, evolutionary development, ecology, and use in correlation of strata.

235. *Introductory Paleobotany.* I. 4 hr. PR: Geol. 3. (Required Saturday field trips at student's expense.) Resume of development of principal plant groups through the ages, present distribution, mode of occurrence and index species, methods of collection.

251. *Advanced Topics in Structural Geology.* II. 4 hr. PR: Geol. 152 and 261 or consent; Math. 15; undergraduates need consent. (Two two-day field trips required. Basic field equipment and field trips are at student's expense.) Studies into the development of structures emphasizing both theoretical and experimental approaches. Two two-day field trips required. (Offered in Spring of odd years.)

261. *Stratigraphy and Sedimentation.* II. 3 hr. PR: Geol. 3, 4, 152, 185, or consent. (Two-day field trip required. Basic field equipment and field trips at student's expense.) Study of sediments and sedimentary rocks. Field techniques stressed as data gathered and interpreted from rocks of Pennsylvanian age in the Morgantown vicinity.

266. *Appalachian Geology Field Camp.* S. 6 hr. PR: Geol. 152, 185, 261, and consent. (Living expense in addition to tuition must be paid at time of registration.) Practical experience in detailed geological field procedures and mapping.

270. *Mineral Resources.* II. 3 hr. PR: Geol. 1, 184. Description, mode of occurrence, and principles governing the formation of ore deposits.

272. *Petroleum Geology.* II. 3 hr. PR: Geol. 152. Origin, geologic distribution, methods of exploration and exploitation, uses and future reserves of petroleum and natural gas in the world.

273. *Petroleum Geology Laboratory.* II. 1 hr. PR or Conc.: Geol. 152. Well sample

description, correlation, and interpretation. Construction and interpretation of subsurface maps used in exploration for hydrocarbons.

274. *Coal Geology.* I. 3 hr. PR: Geol. 152 or consent. Introduction to the origin, composition, geologic distribution, and exploration of coals.

287. *Igneous and Metamorphic Petrology.* 4 hr. PR: Geol. 185, and Geol. 385 or consent. Review of current theories for generation and evolution of magmas, and techniques of determining metamorphic conditions from mineral assemblage. Study of igneous and metamorphic rocks in thin section. (Weekend field trip at student's expense.) 3 hr. lec., 1 hr. lab.

290. *Geologic Problems.* I, II, S. 1-6 hr. (12 hr. max.) PR: Consent. (Also includes field trips such as Florida Bay carbonate trip.) Special problems for senior and graduate students.

294. *Introduction to Geochemistry.* II. 4 hr. PR: Chem. 16. Basic review of physical and aqueous chemistry, discussion of basic geochemical processes; calcium carbonate chemistry, diagenetic processes, weathering, the silicate and iron system.

German (Ger)

1. *Elementary German.* I, II. 3 hr.

2. *Elementary German.* I, II. 3 hr.

3. *Intermediate German.* I, II. 3 hr. PR: Ger. 1 and 2, or equiv.

4. *Intermediate German.* I, II. 3 hr. PR: Ger. 3, or consent. Continuation of Ger. 3.

10. *Intensive Elementary German.* I. 6 hr. The equivalent of Ger. 1 and 2 combined into one course.

11. *Intensive Intermediate German.* II. 6 hr. PR: Ger. 1 and 2 or 10 or consent. The equivalent of Ger. 3 and 4 combined into one course.

23. *Intermediate German: Reading.* I. 3 hr. PR: Ger. 1 and 2, or equiv.

24. *Intermediate German: Reading.* II. 3 hr. PR: Ger. 3, 23, or equiv. Cont of Ger.23.

33. *Intermediate German: Cultural Emphasis.* I. 3 hr. PR: Ger. 1 and 2, or equiv.

34. *Intermediate German: Cultural Emphasis.* II. 3 hr. PR: Ger. 3, 33, or equiv. Continuation of Ger. 33.

101. *Commercial German.* 3 hr. PR: Ger. 4 or consent. Practical speaking, writing, and reading experience in German as it relates to business, commerce, and industry.

102. *Commercial German.* 3 hr. PR: Ger. 101 or consent. Continuation of Ger. 101. Preparation for Diplom Wirtschaftsdeutsch.

103. *Advanced German.* I. 3 hr. PR: Ger. 3, 4, or consent.

104. *Advanced German.* II. 3 hr. PR: Ger. 103 or consent.

109. Advanced German. I. 3 hr. PR: Ger. 104 or consent. Continuation of the four basic skills.

110. *Advanced German.* II. 3 hr. PR: Ger. 109 or consent.

111. *German Literature to 1832.* I. 3 hr. PR: Ger. 4 or equiv. Readings and discussions of German literature from its earliest beginning until 1832. Representative selections from each major period will be read.

112. *German Literature Since 1832.* II. 3 hr. PR: Ger. 4 or equiv. Readings and discussions of German literature from 1832 to the present time. Representative selections from each major period will be read.

121. *Scientific German.* I. 3 hr. PR: Ger. 1, 2. Primarily for students in science courses.

122. *Scientific German.* II. 3 hr. PR: Continuation of Ger. 121.

131. *German Civilization.* II. 3 hr. PR: Ger. 4 or consent. A study of contemporary German institutions, customs, and society.

191. *Special Topics.* I, II. 1-4 hr.* PR: Consent.

195. *Field Experience.* I, II, S. 1-18 hr.* PR: Consent.

243. *Medieval German Literature.* I. 3 hr. PR: 18 hr. of German or consent.

245. *Classicism and Romanticism.* I. 3 hr. PR: 18 hr. of German or consent. Critical study of German literature from 1750 to 1830.

246. *The Liberal Age.* II. 3 hr. PR: 18 hr. of German or consent. Critical study of German literature from 1830 to 1880.

247. *The Age of Crisis.* I. 3 hr. PR: 18 hr. of German or consent. A critical study of German literature from 1880 to present.

292. *Pro-Seminar.* 1-6 hr.* PR: Consent. Special topics.

Hausa (Hausa)

1. *Elementary Hausa.* I. 3 hr.

2. *Elementary Hausa.* II. 3 hr. Continuation of Hausa 1.

3. *Intermediate Hausa.* I. 3 hr. PR: Hausa 1, 2 or equiv.

4. *Intermediate Hausa.* II. 3 hr. PR: Hausa 3 or equiv.

Health Education (HI Ed)

50. *History and Philosophy of Health Education.* 3 hr. Provides the student with an historical perspective of health education's development, its present status, and its current philosophical foundations.

70. *Health of the Individual.* 3 hr. Examines personal health-related problems in terms of information, services, and action, as they relate to attainment and maintenance of individual health.

71. *Health in the Community.* 3 hr. Develops an understanding of the organization, structure, and function of official, voluntary, and professional community health components in terms of their protecting and maintaining the health of the community.

101. *Elementary School Health Program.* 2 hr. PR: Ed.P. 103 or 105 and junior or senior standing. The organization, educational aspects, and personnel relationships involved in school health services, healthful school living, and health education.

102. *Secondary School Health Program.* 2 hr. PR: Ed.P. 103 or 105 and junior or senior standing. The organization, educational aspects, and personnel relationships involved in school health services, healthful school living, and health education.

104. *Organization and Administration of the School Health Program.* 3 hr. PR: HI. Ed. 71. The underlying philosophy for the organization, structure, administrative policies and procedures, and legal aspects of the school health program.

191. *Special Topics.* I, II, S. 1-3 hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

220. *Drug and Alcohol Abuse Prevention.* 3 hr. Experiences designed to prevent the development of abuse drug-taking relationships by focusing on psychological variables such as self-esteem, coping skills, and development of support networks.

290. *Women and Health.* 3 hr. Examination of theories, myths, and practices surrounding women's physical and mental health from both historical and present-day perspectives. Exploration of specific health issues and controversies and the rise of the women's health movement.

Hebrew (Hebrw)

1. *Elementary Modern Hebrew.* I. 3 hr.

2. *Elementary Modern Hebrew.* II. 3 hr. Continuation of Hebrw. 1.

3. *Intermediate Hebrew.* I. 3 hr. PR: Hebrw. 1, 2 or equiv.

4. *Intermediate Hebrew.* II. 3 hr. PR: Hebrw. 3 or equiv.

191. *Special Topics.* I, II. 1-4 hr.* PR: Consent.

History (Hist)

1. *Western Civilization: Antiquity to 1600.* 3 hr. (Hist. 1 does not have to precede Hist. 2.) A survey of the major developments in Western civilization beginning with the ancient Mediterranean world and concluding with Reformation Europe.

2. *Western Civilization: 1600 to Present.* 3 hr. (Hist. 2 may precede Hist. 1.) A survey of major developments in Western civilization from 1600 to the present with attention to Europe's emerging industrial society and changing role in world affairs.

4. *Latin America: Past and Present.* 3 hr. Introduction to Latin American history, stressing the relationship between the past and present. Special emphasis is given to economic problems, political development, and social change in modern Latin America.

5. *Africa and the Middle East.* 3 hr. Introduction to the history of Africa and the Middle East. Special attention is given to political developments, economic problems, relations with the West, and cultural patterns and changes in the modern era.

6. *East Asia: An Introduction.* 3 hr. Focuses on modern China, Japan, and Korea. Consideration of important problems facing each nation today together with the cultural and historical developments which help explain contemporary affairs in East Asia.

11. *Science, Magic, and Religion.* 3 hr. Examination of the historical development of scientific ideas from the beginning of Western culture through establishment of Newtonian natural philosophy.

12. *Modern Science: Forces, Energy, Order.* 3 hr. Examination of the historical development and interaction of major themes of scientific thought from the beginning of the eighteenth century through the industrial revolution to the present.

52. *Growth of the American Nation to 1865.* 3 hr. (Hist. 52 does not have to precede Hist. 53.) Examines the basic political, economic, and social forces in formation and development of United States before 1865. Emphasis on national development from independence through Civil War.

53. *Making of Modern America, 1865 to the Present.* 3 hr. (Hist. 53 may precede Hist. 52.) Continues the examination of basic political, economic, and social forces in the development of the United States since the Civil War.

100. *Introduction: Medieval-Renaissance Culture.* II. 3 hr. PR: Hist. 1 or consent. Examination of the intellectual, literary, and aesthetic achievements of the two ages and the societies which produced them, concentrating primarily on feudal France and urban Italy between 800-1500.

101. *History of Ancient Times: Stone Age to the Fall of Rome.* 3 hr. Ancient civilizations of the Near East and the Mediterranean.

103. *Medieval Europe: Fall of Rome to the Renaissance.* 3 hr. Historical development of civilization in Europe from 300 to c. 1300 A.D. Semi-topical approach with attention to problems of church development, cultural conflict, church-state relations, social-economic expansion, and intellectual evolution.

105. *Early Modern Europe: Renaissance to the Enlightenment.* 3 hr. Concentrates on political and social developments between 1300-1715 with attention to the Reformation crisis, the seventeenth-century struggle for effective government in England and France, the realignment of European powers, and the rise of modern science.

107. *Revolutionary Europe.* 3 hr. Traces the development of European history from the reign of Louis XV to the end of the Franco-Prussian War. Political and social history emphasized.

109. *Twentieth Century Europe.* 3 hr. Traces the major political, economic, and social developments of Europe from World War I to the present.

110. *Modern Military History.* 3 hr. Military history from the American Revolution to the present, stressing the evolution of warfare with particular attention to strategy, tactics, weaponry and the consequences of war.

111. *Special Topics in History.* 1-3 hr. (May be repeated for a maximum of 9 credit hours as long as content for each semester of Hist. 111 is different.) Selected topics in history.

117. *History of Russia: From Kiev to Nicholas I.* 3 hr. Interdisciplinary approach integrating political, social, economic, diplomatic, and cultural studies to provide more than an introduction to the history of Russia. In-depth study of the various aspects of Russian life in an attempt to provide an understanding of the forces which produced the Russian autocracy.

118. *History of Russia: From the Emancipation to the Present.* 3 hr. Using the same approach as in Hist. 117, an attempt is made to follow the changes which turned an underdeveloped country into one of the major world powers.

119. *British Civilization to 1660.* 3 hr. History of Britain, mainly England, from the earliest times to the Restoration. Political, constitutional, diplomatic, economic, social, religious, intellectual, and cultural developments considered.

120. *British Civilization Since 1660.* 3 hr. History of Britain, mainly England, from the Restoration to the present.

121. *History of Modern Germany.* 3 hr. German history from Congress of Vienna to the end of World War II. Student gains special knowledge of more specialized topics by selecting literature and writing essays on these topics.

141. *Latin America: Culture, Conquest, Colonization.* 3 hr. History of the formative period of Latin America, emphasizing the social and economic interaction between Indians, Europeans, and blacks from the conquest to the wars for independence in the early nineteenth century.

142. *Latin America: Reform and Revolution.* 3 hr. History of modern Latin America, concentrating on the durability of nineteenth-century social, economic, and political institutions, and the twentieth-century reformist and revolutionary attempts to change those institutions.

153. *West Virginia.* 3 hr. Historical foundations and development of West Virginia, with particular emphasis upon the growth of the government, the economy, and the traditions of the state.

155. *History of American Colonial Society, 1607-1763.* 3 hr. The planting and maturation of the English colonies of North America. Relationships between Europeans and Indians, constitutional development, religious ferment, and the colonial economy are studied.

156. *History of the American Revolution, 1763-1790.* 3 hr. The immediate origins and long-range consequences of the movement for independence from Great Britain; includes the 1775-1790 controversy over the charter of new state and federal governments.

157. *Antebellum America, 1781-1861.* 3 hr. (Completion of Hist. 52 is advised.) American history from the Revolution to the Civil War is followed in detail, with particular attention to the formation and operations of government under the Confederation and the Constitution, the development of political parties, the beginnings of industrialization, and the sectional struggles that culminated in war.

159. *The United States, 1865-1918.* 3 hr. Development of the United States during the most intensive phase of American industrialization; special emphasis on ideas of selected Americans on how to cope with the increase in poverty and social malaise which accompanied economic development; attention is also given to the roots of American imperialism.

161. *Recent America, The United States Since 1918.* 3 hr. (Primarily for non-History majors.) The 1920's, the New Deal, World War II, and a survey of developments since World War II.

175. *The Coal Industry in America.* 3 hr. The historical development of the coal industry: the technology of extraction, the political and economic context, the United Mine Workers of America, and the particular social

177. *Nuclear Power and Society.* II. 3 hr. Big science as a political force, the arms race and international tensions, the A-bomb spies and McCarthyism, and the promises and failures of cheap, safe, and clean atomic power. No scientific background assumed. (Offered alternate Spring semesters, even years.)

179. *World History to 1500.* 3 hr. Comparative history of Africa, Asia, and Europe from earliest times until 1500. Political, economic, social, and religious developments with emphasis on patterns of authority, the individual, nature, and society.

180. *World History Since 1500.* 3 hr. Comparative history of Africa, Asia, and Europe from 1500 to the present. Political, economic, and social developments with emphasis on patterns of authority, the individual, nature, society, and the impact of the West.

200. *Greece and Rome.* 3 hr. Covers the Minoan and Mycenaean civilizations, Archaic and Classical Greece. Alexander the Great and the Hellenistic Age, the Roman Republic, the Etruscan and Carthaginian states, and the rise of the Roman Empire.

201. *Social and Economic History of the Middle Ages, 300-1000.* 3 hr. (Hist. 103 is recommended as preparation.) The social-economic crisis of the late Roman and German institutions, the Merovingian and Carolingian economies, Pierenne Thesis, and transition to feudal society.

204. *Ancient and Medieval Science.* 3 hr. Examination of scientific achievements from ancient myths to medieval philosophies of nature. Stresses the internal coherence of approaches to nature taken by various cultures. No scientific background is assumed.

205. *The Renaissance.* 3 hr. The underlying political, economic, and social structure of fourteenth and fifteenth century Italy with concentration on the significant intellectual and cultural trends which characterized the age. Some consideration given to the problem of the impact of the early Reformation movement upon Renaissance culture.

206. *The Reformation.* 3 hr. Distinguishing theological characteristics of the major Reformation movements with concentration on the effect of religious- intellectual crisis on the political and social structure of the sixteenth century.

207. *Early European Science and Culture.* 3 hr. Examination of European intellectual history from the Renaissance to the early eighteenth century with particular attention being paid to the contributions of Copernicus, Bacon, Descartes, Kepler, Galileo, and Newton.

208. *Science and Society, 1750-1914.* 3 hr. Historical examination of the relationship between science and technology with particular attention being paid to the doctrines of Positivism, Darwinism, and Scientific Socialis.

209. *Brazil: Colony to World Power.* 3 hr. Examines the transition of Brazil from a colony to a world power, with special emphasis on recent economic developments, regional diversity, political patterns, foreign affairs, and race relations.

210. *Modern Spain.* 3 hr. Survey of the Moslem, Hapsburg, and Bourbon periods followed by an examination of modern political and social forces, the Civil War, and the rule of Franco.

211. *Technology in the Industrial Revolution.* 3 hr. Technological and social change in Great Britain and the United States. Case studies illustrating the nature of technological development and providing an understanding of the ways in which technology has shaped human experience.

212. *Introduction to Public History.* 3 hr. Introduction to a wide range of career possibilities for historians in areas such as archives, historical societies, editing projects, museums, business, libraries, and historic preservation. Lectures, guest speakers, field trips, individual projects.

213. *Bourbon France.* 3 hr. French history from the reign of Henry IV to the reign of Louis XVI. Special attention given to the reigns of Louis XIII and Louis XIV. Political, cultural, and intellectural history.

214. *The Revolutionary-Napoleonic Era.* 3 hr. French history from mid- eighteenth century to 1815. Special attention given to the background of the French Revolution of 1789, to the political and social history of the revolution, and to Napoleon's nonmilitary achievements.

215. *European Diplomatic History,* 1815 to 1919. 3 hr. Develops an understanding of the forces, men, and events which determined diplomatic relations between the major powers.

216. *European Diplomatic History, 1919 to Present.* 3 hr. Scope similar to Hist. 215.

217. *World War II in Europe.* 3 hr. PR: 6 hrs. history or consent. Impact of World War II on political culture and moral fabric; emphasis on themes of invasion, occupation, collaboration, resistance, survival, and retribution. Alternate years.

219. *Revolutionary Russia, 1905-1939.* 3 hr. Detailed study of the revolutionary era of Russian/Soviet history with emphasis on the origins of Russian radicalism, the upheavals of 1905 and 1917, and Stalin's "revolution from above."

220. *The U.S.S.R., 1939 to Present.* 3 hr. Detailed study of the recent social and political history of the Soviet Union. The Soviet experience in World War II, Stalin's last years, and the conflict between reformism and conservatism since Stalin's death.

221. *Hitler and the Third Reich.* 3 hr. PR: Junior, senior, or graduate standing. Myths and realities of Hitler's public and personal life; emphasis on rise to power, party, ideology, and propaganda techniques; position and policies as fuehrer.
222. *Twentieth-Century Germany from Weimar to Bonn.* 3 hr. The Weimar Republic, the Third Reich, and the two German states created after World War II.

225. *History of Modern China.* 3 hr. Introduction to modern China (since 1839) with attention to China's Confucian heritage; the Chinese effort to modernize in the face of Western diplomatic and economic pressure; specific attention to China's Nationalist and Communist revolutionary traditions.

226. *History of Modern Japan.* 3 hr. Modern Japan (since 1868) with attention to development of Japanese institutions and ideas in earlier periods, especially the Tokugawa Era (1600-1868); examines the rapid pace of economic change in the nineteenth and twentieth centuries along with the important social, political, and diplomatic implications of this change.

227. *East Africa to 1895.* 3 hr. East Africa from earliest times to the beginning of European control. Population movement and interaction, development of varying types of polity, revolutionary changes, and the European scramble for East Africa form the major focus.

228. *East Africa Since 1895.* 3 hr. History of colonial rule and movement to independence in East Africa. Political, economic, and social changes will be examined with particular emphasis on the rise and triumph of African nationalism.

229. *History of Africa: Pre-Colonial.* 3 hr. History of Africa from earliest times to the middle of the nineteenth century. Particular emphasis on population and interaction, state formation, and the development of trade in sub-Saharan Africa as well as the impact of such external influences as Christianity and Islam.

230. *History of Africa: European Dominance to Independence.* 3 hr. History of Africa from the middle of the nineteenth century to the 1960s. Political and economic trends will form major focus.

231. *Seventeenth Century Britain, 1603-1715.* 3 hr. The more significant political, social, economic, religious, and intellectual developments of Britain during a century of revolution and of the men and women who interacted with those movements.

232. *Eighteenth Century Britain, 1715-1832.* 3 hr. The "Age of Aristocracy," the political, social, religious, economic, and intellectual impact of the Industrial, Agricultural, American, and French revolutions.

245. *History of American Women.* 3 hr. Examination of the history of American women from 1607 to the present, with emphasis on working conditions, women's rights, development of feminism, women's role in wartime, and women in the family.

246. *History of European Women.* 3 hr. A survey of the history of European women from antiquity to the present, with emphasis on the philosophic, economic, and societal sources of women's oppression and on women's role in work, the family, and feminist movements.

251. *Afro-American History to 1865.* 3 hr. African background, the slave trade and evolution of slavery in the New World. The attack on slavery and its destruction.

252. *Afro-American History Since 1865.* 3 hr. Reconstruction, the age of reaction and racism, black migration, black nationalism, blacks in the world wars, and desegregation.

253. *Civil War and Reconstruction.* 3 hr. Causes as well as constitutional and diplomatic aspects of the Civil War; the role of the American black in slavery, in war, and in freedom; and the economic and political aspects of Congressional Reconstruction.

257. *The United States From McKinley to the New Deal, 1896 to 1933.* 3 hr. American national history from William McKinley to Franklin D. Roosevelt. Particular attention is given to great changes in American life after 1896; national political, economic, social, and cultural development; the Progressive Era in American politics; and alterations in American foreign relations resulting from the Spanish-American War and World War I.

259. *Recent American History, 1933 to Present.* 3 hr. American national history from the inauguration of Franklin D. Roosevelt to the present. Emphasis on the New Deal; Roosevelt's foreign policies and their impact on American social, technological, and cultural developments; and United States domestic problems and foreign relations since 1945.

263. *American Diplomacy to 1941.* 3 hr. (Assumes some knowledge of the period such as that obtained in Hist. 52 and 53.) American foreign policy and diplomacy from the adoption of the Constitution to the beginning of World War II.

264. *American Foreign Policy and Diplomacy, 1941 to the Present.* 3 hr. (Assumes some knowledge of the period such as that obtained in Hist. 2, 53, or 161.) America's foreign policy and growing involvement in international relations including the U.S. role in World War II, the Korean War, and Vietnam.

266. *American Economic History to 1865.* 3 hr. Origins and development of American business, agricultural, and labor institutions problems, and policies, from 1600 to 1865; influence of economic factors upon American history during this period.

267. *American Economic History Since 1865.* 3 hr. Scope similar to Hist. 266.

268. *The Old South.* 3 hr. (For advanced undergraduate and graduate students.) History of the South—exploring peculiar differences that led to an attempt to establish a separate nation. The geographical limitation permits a detailed study of economic and social forces within the context of the larger national history.

269. *The New South.* 3 hr. Integration of the South into the nation after the Civil War. Emphasis on southern attitudes toward industrialization, commercial agriculture, organized labor, and the black. Special attention to the southern literary renaissance and conservative and progressive politics of the southern people.

273. *Appalachian Regional History.* 3 hr. Historical survey of Central Appalachia's three phases of development: traditional society of the nineteenth century, the transformation of a mountain society by industrialization at the turn of the twentieth century, and contemporary Appalachia.

274. *The City in American History.* 3 hr. A survey of urban history in the United States, including the colonial period, with emphasis on the nineteenth and twentieth centuries,

focusing on physical development of cities (planning, transportation, artchitecture, suburbanization) and social history.

289. *Introduction to Historic Preservation.* 3 hr. Introduction to historic preservation issues, including law, economics, not-for-profit organizations, site interpretation, architectural history, industrial archeology, federal programs, downtown revitalization, and landmarks commissions.

290. *Introduction to Historical Research.* 3 hr. PR: History major or consent. Introduction to research techniques useful for history. Instruction in locating sources, taking notes, and writing research papers.

Home Economics Education (HEEd)

175. *Methods of Teaching Home Economics.* I. 3 hr. To be taken the semester or year before student teaching. Planning, implementing. and evaluating teaching-learning experiences in a supportive learning environment. (Also listed as C&I 175.)

219. *Occupational Home Economics.* II. 3 hr. Prepares teachers to implement occupational home economics programs. Emphasis on organizing and administering programs, developing laboratory and work experiences, recruiting students, and evaluating progress.

278. *Vocational Home Economics.* II. 3 hr. PR: Senior standing or consent. Develops an understanding of federal vocational legislation to enable an individual to develop and implement programs in vocational education. (Offered in Spring of even years.)

281. *Contemporary Problems in Home Economics.* I. 3 hr. Applies the broad- based philosophy of home economics to current individual family and community problems, e.g., societal impact on families, changing consumer market, changing roles, day care, diminishing energy resources, career education, etc.

Home Management and Family Economics (HM&FE)

160. *Communication of Consumer Information.* II. 3 hr. (Open to all students.) Introductory experiences to develop public communication skills through live and mediated presentations that meet the informational needs of consumers.

165. *Home Management: Principles and Applications.* I. 3 hr. (Open to all students.) Personally meaningful examination of the management process as it contributes to the development and effective use of human and non-human resources in the achievement of personal satisfaction in a changing world.

167. *Household Equipment.* I. 3 hr. (Open to all students.) A consumer approach to evaluating portable and major household equipment with a focus on concern for: energy efficiency, safety, task performance, ecological impact, and use and care. (Offered in Fall of even years.)

261. *Consumer Economics.* II. 3 hr. Understanding the consumer's role in our economy. Study of research methods and techniques used to identify, understand, and solve consumer problems.

Honors

192. *Senior Honors Seminar.* I, II. 3 hr. PR: Senior standing and membership in University Honors Program and permission of University Honors Program Director. Careful investigation of and independent research on a topic approved in advance by the University Honors Director-University Honors Council, and instructor.

Horticulture (Hort)

107. *General Horticulture.* I. 3 hr. PR: Biol. 1 and 3, or consent. Principles underlying present-day horticulture practice with special emphasis on how basic discoveries in plant science have been applied in horticulture.

116. *Flower Judging.* II. 1 hr. One laboratory period per week. Identification and judging of flowers with emphasis on the aesthetic values which underlie desirability in a variety.

117. *Vegetable Identification and Judging.* I. 1 hr. Identification and judging the common vegetables and the test associated with olericulture in West Virginia. Emphasis is placed on the cultural practices associated with top quality vegetables.

151. *Floral Design.* I. 3 hr. Basic course in flower arrangement to cover occasions for the home and retail flower shop.

160. *Woody Plant Materials.* 3 hr. PR: Biol. 1, 3 or equiv. Common ornamental woody plants, their identification, cultural needs, and evaluation of use; some outdoor study and a one-day nursery trip. 2-3 hr. lab.

162. *Herbaceous Plant Materials.* I. 3 hr. Identification, description, adaptability, and evaluation of selected herbaceous annuals and perennials with emphasis on their use as design elements.

204. *Plant Propagation.* II. 3 hr. PR: Pl. Sc. 52 or consent. Study of practices of plant propagation and factors involved in reproduction in plants.

242. *Small Fruits.* I. 3 hr. PR: Pl. Sc. 52, Hort. 107, or consent. (One 2- day field trip required.) Taxonomic, physiological, and ecological principles involved in production and handling of small-fruits. 2 lec., 1 scheduled lab. (Offered in Fall of odd years.)

243. *Vegetable Crops.* I. 3 hr. PR: Pl. Sc. 52 or consent. (One 3-day field trip required.) Botanical and ecological characteristics influencing the production of vegetable crops. 2 hr. lec., 1 hr. lab. (Offered in Fall of even years.)

244. *Handling and Storage of Horticultural Crops.* I. 3 hr. PR: Pl. Sc. 52, Chem. 16. Characteristics of perishable crops. Methods and materials used to maintain quality. 2 lec., 1 scheduled lab. (Offered in Fall of odd years.)

245. *Greenhouse Management.* II. 3 hr. PR: Two semesters of Inorganic Chemistry and Hort. 107 or consent. Greenhouse as a controlled plant environment. How to regulate factors influencing plant growth and development within specialized environments of greenhouses.

246. *Tree Fruits.* I. 3 hr. PR: Pl. Sc. 52 or consent. Principles and practices involved in production of tree fruits. 2 lec., 1 scheduled lab. (Offered in Fall of even years.)

Human Nutrition and Foods (HN&F)

55. *Food Principles and Practices.* I. 4 hr. Basic principles of the science of food preparation. Emphasis on understanding the reasons for basic practices and procedures essential for obtaining a standard product and on function of ingredients.

71 *Introduction to Human Nutrition.* I, II. 3 hr. Nutrient structure, metabolism, integrated function and their importance to human well-being during all stages of the life cycle. Current concerns and those of special interest to college students in meeting nutrient needs.

151. *Planning Meal Production.* II. 4 hr. PR: HN&F 55 and 71;PR or conc: Math 3 or higher, HMFE 165. Introduction to planning and management of meal production and food purchasing in the family and institutional settings.

153. *Food Service Systems Management.* I. 4 hr. PR: HN&F 55, 151, and Dietetics or Institutional Administration major. Introduction to food service systems and systems management. Field experience in institutional and commerical food services.

154. *Food Systems Equipment; Layout, Design.* II. 3 hr. PR: HN&F 153 and consent. Basic principles in the design and layout of various food service operations; principles governing the purchase, use, and operation of equipment. Field trips and clinical experience. (Offered in odd years.)

158. *Personnel Functions in Food Service.* II. 3 hr. PR: HN&F 153; Manag. 105. Personnel functions in large-scale food service systems.

172. *Contemporary Issues in Nutrition.* I. 3 hr. PR: HN&F 71. Contemporary issues in nutrition including a critical review of food practices and recent trends in nutrition. (Offered in Fall of odd years.)

179. *Introduction to Dietetics.* I. 1 hr. Coreq: HN&F 71. This is an introductory level course designed to acquaint prospective dietetic practitioners with the profession of dietetics.

250. *Restaurant Operations Management.* 3 hr. PR: HN&F 153. Application of the principles of food and beverage management in a full service restaurant existing within a commercial/non-commercial food service operation; emphasis on provision of atmosphere and service integral to fine dining. 1 hr. lec., 2 hr. lab.

254. *Experimental Foods.* II. 4 hr. PR: HN&F 55, organic chemistry or consent. Study of basic chemical processes that occur within food systems including the effects of storage, processing, and alterations in formulation on qualities of food products; introduction to laboratory methodology in foods research.

257. *Control of Food Service Systems.* 3 hr. PR: HN&F 153 and Acctg. 51 or equiv. Introduction to managerial control within food service systems. Emphasis on cost and quality control techniques, laws governing institutional food/nutrition services, and trends in food service administration.

258. *Food Systems Management Practicum.* II. 4 hr. PR: HN&F 153 and consent. Ten weeks or 400 hours of practical experience in operations of the type in which the student is majoring.

260. *Advanced Nutrition.* I. 3 hr. PR: HN&F 71, physiology. Coreq.: Biochemistry. Role of food nutrients in physiological and biochemical processes of the body; nutritional needs of healthy individuals under ordinary conditions.

261. *Nutrition Laboratory Experimentation.* I. 1 hr. Coreq.: HN&F 260 or consent. Nutrient analysis and introduction to nutrition experimentation.

272. *Community Nutrition 1.* I. 2-3 hr. PR: HN&F 71. Beginning planning for community nutrition for individuals and families at various stages of the life cycle. Roles of concerned agencies and professional groups. Clinical experience in community facilities for the third credit-hour is optional.

274. *Nutrition in Disease.* II. 4 hr. PR: HN&F 71; physiology or consent; biochemistry required for dietetics majors. Nutritional care aspects of patients. Modification of diet to meet human nutrition needs in various clinical conditions.

279. *Dietetics As a Profession.* I. 1 hr. PR: Senior standing. Discussion of the profession of dietetics and the professional organization, American Dietetic Association (ADA). Completion of materials to meet ADA membership requirements.

Humanities (Hum)

1, 2. *Introduction to the Course of Western Civilization.* I, II. 3 hr. per sem. First semester treats the high points of Greco-Roman and Medieval European civilizations: their art, architecture, philosophy, religion, literature, and culture. Second semester shows how these ideas and achievements were modified and added to during the Renaissance, the Age of Classicism, and the revolutionary nineteenth century.

3, 4. *Honors Seminar in Humanities.* I, II. 3 hr. per sem. Honors courses for selected students mirroring Hum. 1 and 2, respectively. Affords participants a wider opportunity for discussion than in Hum. 1 and 2 and for reading the classic statements on the nature of civilization.

5. *Cultures of Japan.* I, II. 3 hr. Introduction to the intellectual, artistic, and literary cultures and civilizations of Japan within the context of the historical society.

10. *The Classic Forms of the Hero in Western Civilization.* I. 3 hr. Courage and the classic forms of the hero in the twentieth century. Historical study of art, literature, philosophy, and religious thought from the Greek classics to contemporary novels and films. (Two lectures, one discussion per week.)

11. *The Figure of the Absurd Hero in Western Civilization.* II. 3 hr. Courage and the figure of the "absurd hero" in the twentieth century. Historical study of literature, art, religion, and philosophy from the New Testament to contemporary novels and films. (Two lectures, one discussion per week.)

20. *Humanities of China.* 3 hr. Introduciton to the nature and role of philosophy, literature, and art in classical and contemporary China. 3 hr. lec.

191. *Special Topics.* I or II. 3 hr.

290. *Special Topics.* I or II. 3 hr.

Industrial Engineering (I.E.)

20. *Fundamentals of Industrial Engineering.* 1 hr. PR: Sophomore standing. An introduction to the basic principles of industrial engineering. 1

113. *Engineering Statistics.* 3 hr. PR: Math. 17. The use of statistical analysis in engineering decision making. Topics covered include basic statistical methods of describing data, common statistical distributions encountered in engineering, test of hypotheses, confidence intervals, and simple linear regression.

140. *Motion and Time Study.* 3 hr. PR: Sophomore standing. Principles and techniques, job analysis, standardization, and formula construction; stop watch and micromotion analysis of industrial operations; development of production and incentive standards. Human factors. 2 hr. lec., 3 hr. lab.

201. *Principles of Solidification.* 3 hr. PR: I.E. 200 or consent. Material and energy balances, solidification of metals, riser and gating systems for castings, fluidity of metal, casting design, and molding processes.

202. *Manufacturing Processes.* 2 hr. PR: Ch.E. 105, M.A.E. 43. Lectures and demonstrations relating to materials, properties, parameters, design, equipment, economics and computer control of processing systems emphasizing casting, machining, joining and forming operations.

203. *Manufacturing Processes Laboratory.* 1 hr. Coreq.: I.E. 202. Laboratory experiments and demonstrations of the basic manufacturing operations of casting, machining and joining. Process parameter measurement, inspection techniques and CNC programming are performed and laboratory report writing is emphasized.

205. *Design for Manufacturability.* 2 hr. PR: I.E. 202 and 203. Aspects of design, manufacturing and materials; emphasis on design for manufacturability and assembly, including material selection and manufacturing processes on product cost. 2 hr. lec.

206. *Design for Manufacturability Laboratory.* 1 hr. PR: I.E. 202 and 203. Laboratory tasks dealing with manufacturing and materials; process selection, and cost estimation for component and subassembly design; emphasis on utilizing design for manufacturability and assembly software. 1 hr. lab.

211. Expert Systems in Manufacturing. 3 hr. PR: I.E.202, 203, 281. Expert systems design and development for manufacturing applications; knowledge acquisition, representation, search techniques, inference engines, data base interfaces, algorithmic interfaces.

214. *Analysis of Engineering Data.* 3 hr. PR: I.E. 113. Introduction to linear statistical models. Design and analysis of simpler experimental configurations occurring frequently in engineering studies. Similarities and differences between regression and experiment design models emphasized in a vector-matrix setting.

215. *Statistical Decision Making.* 3 hr. PR or Conc.: I.E. 113. Basic concepts of probability theory. Discrete and continuous distributions, joint and derived distributions, with application to industrial and research problems. Introduction to generating functions and Markov chains.

216. *Industrial Quality Control.* 3 hr. PR: I.E. 113. Principles and methods for controlling the quality of manufactured products, with emphasis on both economic and statistical aspects of product acceptance and process control.

217. *Total Quality Management.* 3 hr. PR: IE 113. Fundamentals and philosophy of total quality management in industry and government. Includes implementation of quality function deployment and the tools of off-line and on-line quality assurance procedures.

222. *Job Evaluation and Wage Incentives.* 3 hr. PR: I.E. 140 or consent. Principles used in evaluating jobs, rates of pay, characteristics and objectives of wage incentive plans, incentive formulae and curves.

240. *Labor and Productivity.* 3 hr. PR: Consent. The work force as a critical element of productivity. Topics include industrial engineering involvement in collective bargaining, labor relations, and work practices.

242. *Production Planning and Control.* 3 hr. PR: I.E. 140; Conc.: I.E. 214. Principles and problems in forecasting, aggregate planning, material management, scheduling, routing, and line balancing.

243. *Facility Planning and Design.* 3 hr. PR: I.E. 242, 250. Problems of facility and equipment location. Long-range planning of industrial facilities. Block and detailed layout of manufacturing plants and general offices. Space utilization and allied topics in facility design.

249. *Design of Dynamic Materials Systems.* 3 hr. PR: I.E. 140 or consent. Application of industrial engineering theory and practice to selection of material systems and equipment including efficient handling of materials from first movement of raw materials to final movement of finished product. Present quantitative design techniques.

250. I*ntroduction to Operations Research.* 3 hr. PR: I.E. 113, 281. Basic tools and philosophies of operations research. Tools include: linear programming, Markov chains, queuing theory, and simulation. Other operations research techniques are presented as they relate to the overall systems philosophy.

251. *Analytical Techniques of Operations Research.* 3 hr. PR: I.E. 113 or consent. Nonlinear optimization techniques useful in operations research and industrial engineering studies. Classical optimization techniques, quadratic, geometric and dynamic programming, branch and bound and gradient techniques.

260. *Human Factors Engineering.* 3 hr. PR: I.E. 113 and I.E. 140 or equiv. Includes the study of ambient environment, human capabilities and equipment design. Systems design for the human-machine environment interfaces will be studied with emphasis on health, safety, and productivity.

261. *System Safety Engineering.* 3 hr. PR: Consent. The concepts of hazard recognition, evaluation analysis and the application of engineering design principles to the control of industrial hazards.

277. *Engineering Economy.* 3 hr. Basic concepts of financial analysis investment planning and cost controls as they apply to management technology investment in manufacturing; financial planning and budgeting as applied to an engineering function.

280. *Industrial Engineering Problems.* 1-3 hr. PR: Consent. Special problems.
281. *Computer Applications in Industrial Engineering.* 3 hr. PR: Engr. 2; I.E. 140. Introduction to computer applications in manufacturing. Emphasis on system design and analysis and the role of computers in productivity improvement.

284. *Simulation by Digital Methods.* 3 hr. PR: I.E. 113, 281, or consent. Introduction to Monte Carlo simulation methods and their application to decision problems. Student identifies constraints on problems, collects data for modeling and develops computer programs to simulate and analyze practical situations. Interpretation of results emphasized.

291. *Design of Productive Systems 1.* 3 hr. PR: Senior standing (21 hours of required E.E. courses) in industrial engineering. The integration of industrial engineering principles in the design of productive systems. Emphasis will be on analysis of different systems for productivity management.

292. *Design of Productive Systems 2.* 3 hr. PR: Senior standing in industrial engineering. Continuation of I.E. 291.

Industrial and Labor Relations (ILR)

262. *Collective Bargaining and Labor Relations.* 3 hr. PR: Econ. 160 or consent. Examination of the theory and practice of collective bargaining. Topics include economic and historical environment, labor law, unionization, contract negotiation, patterns in contract content, conflict resolution, grievance handling, and an introduction to arbitration.

Interior Design and Housing (ID&H)

31. *Introduction to Interior Design.* I. 3 hr. Design philosophy, elements and principles, analysis, and aesthetic and functional evaluation in the context of design as a means of human communication.

32. *Interior Design Graphics 1.* II. 3 hr. Various presentation media and techniques used to provide communication skills such as drafting, rendering, perspective drawing, and layout organization for professional graphic presentation.

33. *Housing Design.* I, II. 3 hr. PR: ID&H 31 or consent. Housing and home planning. Selection, arrangement, and use of interior and exterior space for activities carried on, in, and around the home.

34. *Interior Design Graphics 2.* 3 hr. PR: ID&H 32. Studio course in spatial graphics; experience in constructing and using perspective grids; perspective sketching and basic color rendering.

35. *Interior Design and Housing.* II, S. 3 hr. PR: ID&H 31 or consent. A practical course in which the student becomes familiar with the fundamentals of interior design through work with floor plans, furniture selection and arrangements.

133. *Interior Design.* I, II. 3 hr. PR: ID&H 34. Study and application of the functional aspects of interior design through problem solving situations and extensive presentation work.

136. *Contract Design.* I. 3 hr. PR: ID&H 133. A studio course which will emphasize the contract aspects of the interior design field. The design of public spaces with particular emphasis on office planning and design as a work environment.

137. *Professional Practices for Interior Designers.* II. 3 hr. PR: ID&H 133. The relationships between the management/marketing functions and the design process. A problem solving approach to all the activities which contribute to the completion of an interior design installation.

233. *Decorative Arts 1.* I. 3 hr. PR: 9 hr. ID&H. The decorative arts— antiquity to American periods.

234. *Decorative Arts 2.* II. 3 hr. PR: ID&H 233. The decorative arts— American periods to present.

235. *Contemporary Interior Design.* I. 3 hr. PR: ID&H 234. Study of the history of interiors, 1900-present.

238. *Portfolio Design.* II. 3 hr. PR: Senior standing. Development and preparation of a portfolio for interior design and National Council for Interior Design Qualification examination.

239. *Interior Design Field Experience.* II. 3-6 hr. (May be repeated to max. of 6 hr.) PR: Written consent, senior standing. Opportunity to learn and work within a professional environment with practicing designers.

Italian (Ital)

1. *Elementary Italian.* I. 3 hr.

2. *Elementary Italian.* II. 3 hr. Continuation of Ital. 1.

3. *Intermediate Italian.* I. 3 hr. PR: Ital. 1, 2, or equiv.

4. *Intermediate Italian.* II. 3 hr. PR: Ital. 3 or consent. Continuation of Ital. 3.

109. *Composition and Conversation.* I. 3 hr. PR: Ital. 4 or consent.

110. *Advanced Conversation.* II. 3 hr. PR: Ital. 4 or consent.

191. *Special Topics.* I, II. 1-4 hr.* PR: Consent.

195. *Field Experience.* I, II, S. 1-18 hr.* PR: Consent.

Japanese (Japan)

1. *Elementary Japanese.* I. 3 hr.

2. *Elementary Japanese.* II. 3 hr. Continuation of Japan. 1.

3. *Intermediate Japanese.* I. 3 hr. PR: Japan. 1, 2 or equiv.

4. *Intermediate Japanese.* II. 3 hr. PR: Japan. 3 or equiv.

103. *Advanced Japanese.* 3 hr. PR: Japan. 3 and 4 or consent.

104. *Advanced Japanese.* 3 hr. PR: Japan. 103 or consent.

109. *Advanced Japanese.* 3 hr. PR: Japan. 104 or consent.

110. *Advanced Japanese.* 3 hr. PR: Japan. 109 or consent.

191. *Special Topics.* I, II. 1-4 hr.* PR: Consent.

Journalism (Journ.)

1. *Introduction to Mass Communications.* I, II. 3 hr. (Recommended for all University students.) Mass communicator's role in developing political, social, and economic fabrics of a democratic society. Organization and function of newspapers, magazines, broadcast stations, and other principal media, including the role of advertising and public relations.

15. *Basic Journalistic Writing.* I, II, S. 3 hr. PR: Engl. 1 and 2, Journ. 1 with a C or better, passage of Journalism qualifying exam. Basic media writing with emphasis on English grammar, punctuation and spelling.

18. *News Writing.* I, II. 3 hr. PR: Admission to the School and Journ.1, Journ. 15 with C's or better. Essentials of fact-gathering; writing news and features; ethics and responsibilities of news reporting. Typing ability required. A departmental honors section is available to students who have superior writing ability; permit is required. Taught in two 2-hour lecture/lab blocks per week.

19. *Copy Editing and Make-Up.* 3 hr. PR: Journ. 18. Copy editing, headline writing, handling of wire copy, and make-up; experience on School's laboratory paper *Take One.*

50. *Publications Problems.* 1 hr. PR: Journ. 15 or consent. Exploration of planning, designing, and printing problems, and dealing with print professionals.

120. *Introduction to Photography.* I, II, S. 3 hr. Basic techniques of film developing and printing. Students are required to purchase their own film, enlarging paper, chemicals, and have access to a camera. The supplies cost approximately $60-80 per semester.

130. *Advanced Photography.* I. 3 hr. PR: Journ. 120 or equiv., or consent. Designed to equip students to serve all communication media including magazines, newspapers, and television. A high level of competence is assumed at the outset. Course requirements include a portfolio (general or around a specific theme) and numerous weekly assignments.

141. *Advanced Journalism Problems.* I, II, S. 1-3 hr. PR:junior or senior standing in the School of Journalism, foundation courses in one of the sequences. Intensive, independent study; to be approved by the dean.

221. *Mass Communications Research Methods.* I,II. 3 hr. PR: Journ.1, 15; and Journ. 18, or PR 111, or Adv.113 or BN 117. A broad study of scientific and critical research

methods as they apply to mass media practices; review of relevant sources for historical data gathering, readership and audience analysis; evaluation of marketing and public opinion research. (2 hr. lec., 1 hr. field experience.)

231. *Multi-Media Production.* 3 hr. PR: Journ. 120 or consent. Preparation of two multi-media presentations; participation in a client-oriented project; color theory, slides, scriptwriting, research, and other aspects of visual communications. Supplies cost about $75.00.

241. *Internship.* 3 hr. PR: Journalism majors only and foundation courses in one of the sequences. Full-time employment for a minimum of 10 weeks under a signed contract detailing the terms of the experience. Graded pass/fail.

242. *Practicum.* I, II, S. 1-2 hr. Journalism majors only. PR:Foundation courses in one of the sequences. Student must have a signed contract detailing terms of the learning experience. 8-20 hours per week for a minimum of 10 weeks, while taking other courses. (Graded on a Pass/Fail basis.)

299. *Contemporary Media Issues and Ethics.* I, II. 2 hr. PR: Senior standing in School of Journalism (Required of all senior journalism majors.) In-depth study of contemporary media issues such as right of access to media, morality in news and advertising, new FTC and FCC regulations, media responsibility to society, social responsibility of media professionals. Individual research papers on issues with ethical considerations may be required.

Landscape Architecture (L. Arc.)

5. *Introduction to Landscape Architecture.* I, II. 1 hr. A general overview of the field of landscape architecture, environmental design and planning.

20. *Landscape Architectural Drawing.* I. 3 hr. PR: For Landscape Architecture majors only. Introduction to elements of visual techniques in drafting, basic design, and environmental systems. 2 3-hr. studios.

21. *Landscape Architectural Graphics.* II. 3 hr. Introduction to design and graphic methodology with applications to current standards. Development of principles of communication in two- and three-dimensional visual thinking applicable to environmental design professions. 2 3-hr. studios.

31. *Landscape Construction Materials and Methods.* I. 3 hr. PR: L. Arc. 20. A study of materials used in landscape architectural construction with emphasis on methods of construction and the preparation of construction drawings for design implementation. 2 hr. lec., 1 2-hr. studio.

41. *Planting Design* 1. II. 3 hr. PR: L. Arc. 21, 40. Study of planting technqiues, preparation of planting and seeding specifications, and an introduction to the preparation of planting plans. 2 hr. lec., 1 2-hr. studio.

50. *Theory of Landscape Architectural Design.* I. 3 hr. PR: L. Arc. 21 or equiv. Application of elements and principles of art and design to landscape architecture. 1 hr. lec., 2 2-hr. studios.

51. *Landscape Architectural Design.* II. 3 hr. PR: L. Arc. 50 or equiv. Investigation and application of various design factors which play a role in design and natural and man-made environment. 1 hr. lec., 2 2-hr. studios.

112. *History of Landscape Architecture.* II. 3 hr. PR: Consent. A broad survey of the history of the designed environment with emphasis on the development of landscape architecture.

131. *Landscape Architectural Construction 1.* I. 4 hr. PR: C.E. 5 or equiv., Math. 3 and 4 or 14 or equiv. The study of the technical principles of grading design, their application to site planning, and preparation of land form grading plans. 1 hr. lec., 2 3-hr. studios.

132. *Landscape Architectural Construction 2.* II. 4 hr. PR: L. Arc. 131. Study and preparation of parkway plans (road alignment), surface and sub- surface drainage plans, advanced grading plans, and cost estimates. 2 hr. lec., 2 2-hr. studios.

140. *Plants and Design 2.* I. 3 hr. PR: L. Arc. 41, 51; Conc.: L. Arc. 150. Study of native and naturalized plants of this region, their ecological tolerances, their importance to site analysis, and their use in biomorphic design. 2 3-hr. studios.

141. *Planting Design 2.* II. 3 hr. PR: L. Arc. 140. The study of plants and planting design considerations for a variety of specific conditions. 2 3-hr. studios.

150. *Landscape Architectural Design 2.* I. 5 hr. PR: L. Arc. 41 and 51. Study of medium scale site design with emphasis on site analysis, design methodology and presentation. 1 hr. lec., 2 3-hr. studios.

151. *Landscape Architectural Design 3.* II. 5 hr. PR: L. Arc. 131, 140, 150. Site-design problems dealing with complex environmental systems emphasizing rural and urban design. Projects are integrated with landscape architectural construction. 2 hr. lec., 2 3-hr. studios.

229. *Landscape Architecture.* I. 3 hr. PR: For non-Landscape Architecture majors only. An appreciation of the basic principles of planting design and information pertaining to the use of ornamental plants around the home. 2 hr. lec., 1 2-hr. lab.

248. *Design Analysis.* II. 2 hr. PR: Consent. Analysis of planning and design projects to offer solutions to a given problem. (Offered in Spring of odd years.)

250. *Advanced Landscape Architectural Design 1.* I. 6 hr. PR: L. Arc. 132, 141, and 151. Comprehensive design problems integrating all aspects of site design, planting design and construction. Includes advanced projects for urban and rural sites. 3 hr. lec., 2 3-hr. studios.

251. *Advanced Landscape Architectural Design 2.* II. 6 hr. PR: L. Arc. 250. Advanced comprehensive design problems. Continuation of L. Arc. 250, culminating in a comprehensive final design project. 3 hr. lec., 2 3-hr. studios.

265. *Regional Design.* II. 3 hr. PR: Consent. Consideration of regional landscapes in order to effectively relate design to the ecology and development of a region. (Offered in Spring of even years.)

284. *Professional Practice.* I. 3 hr. PR: Consent. Procedures in preparation of contract documents, fees, estimates, operation of an office, and relationship to clients and contractors.

Language Teaching Methods (Lang)

191. *Special Topics.* I, II, S. 1-4 hr.* PR: Consent.

195. *Field Experience.* I, II, S. 1-18 hr.* PR: Consent.

221. *The Teaching of Foreign Languages.* I. 3 hr. PR: Consent. Required of all students who are prospective foreign language teachers on the secondary level.

292. *Pro-Seminar.* I, II, S. 1-6 hr.* PR: Consent. Special topics.

Library Science (L. Sci.)

1. *Using Books and Libraries.* I, II. 1 hr. Provides a working knowledge of library facilities, particularly of the University Library. Includes how and when to use basic reference sources and search strategy for term-paper preparation. Useful to any student in the University.

191. *Special Topics.* I, II. 1-4 hr. PR: Consent.

201.* *Reference and Bibliography.* I, II. 3 hr. Basic reference materials in print and non-print formats (dictionaries, encyclopedias, indexes, yearbooks, computerized data bases, etc.) are studied and evaluated. Emphasizes theory of information seeking and practical experience with materials.

203.**Literature for Children.* I, II. 3 hr. A survey of children's literature including its historical development as well as current trends. Emphasizes selection, critical evaluation, and utilization of literary materials for developmental, recreational, and curriculum needs. Appropriate media included.

205.* *Young Adult Literature.* I, II. 3 hr. Survey of adolescent literature and other library materials (print and non-print) for junior and senior high school students.

222 .**Field Practice.* I, II. 3 hr. PR: L. Sci. 201, 203, 205, 223, 250. Practical experience in a variety of public, school, and special libraries, and instructional materials centers, under the supervision of experienced librarians and media specialists. Students must complete 100 clock hours.

223. **Cataloging and Classification.* I. 3 hr. Basic principles and problems of cataloging and classification, with practical experience in processing the various types of books and materials. Problems peculiar to the teacher-librarian are considered.

250. *Managing School Library Media Centers.* II. 3 hr. PR: L. Sci. 201, 203, 205, 223, or consent. Covers planning, organizing, and operating a school library media center. Includes staffing, budgeting, scheduling, public relations, and program design. Stresses the role of the media center in the total educational process.

291. *Advanced Study.* I, II. 1-3 hr. (Course may be repeated for credit only when the content of the course is different.) Study of current topics related to informational resources or the school media center. A final project will be required.

*Presently required for School Library Media Certification in West Virginia.

Linguistics (Lingu.)

1. *Introduction to Language.* I, II, S. 3 hr. General introduction to the nature of human language—its sounds, structure, mechanisms, and forms (oral/sign); its evolution and variation, how it is learned and stored, and how it differs from animal communications systems.

3. *Introduction to Language Comparison.* I. 3 hr. (No previous language experience required.) Comparison of various Indo-European languages.

111. *Introduction to Structural Linguistics.* I, II. 3 hr. Required for foreign language majors.

191. *Special Topics.* I, II, S. 1\nd4 hr.* PR: Consent. 202.<Phonology. >I. 3 hr. PR: Lingu. 1, 111 or consent. Description of sounds and sound systems in language. Articulatory phonetics. Structuralist and generative approaches to phonemics.

217. *Structure of Spanish.* I. 3 hr. PR: 18 hr. of Spanish and Lingu. 111 or consent. Description of the phonological or grammatical systems of Spanish, with emphasis on contrastive analysis (Spanish/English) and applied linguistics.

247. *Structure of Modern French.* I. 3 hr. PR: 18 hr. of French and Lingu. 111 or consent. Study of phonology, morphology, and syntax of modern French together with a contrastive analysis of French and English.

257. *Structure of German.* II. 3 hr. PR: 18 hr. of German and Lingu. 111 or consent. Phonological, morphological, and syntactical structure of contemporary German language.

267. *Structure of Russian.* II. 3 hr. PR: 18 hr. of Russian and Lingu. 111 or consent. Phonological, morphological, and syntactical structure of contemporary Russian.

283. *Transformational Grammar.* S. 3 hr. PR: Lingu. 111 and consent. Emphasis on generative syntax in English, German, Romance, and Slavic languages.

284. *History of Linguistics.* I. 3 hr. PR: Lingu. 111 or consent. Development of linguistics from Greeks and Romans to contemporary researchers with concentration on major linguists and schools of the nineteenth and twentieth centuries.

288. *Sociolinguistics.* I. (Alternate Years.) 3 hr. PR: Lingu. 1 or 111 or consent. Linguistic study of geographical and social variation in languages; effects of regional background, social class, ethnic group, sex, and setting; outcomes of conflict between dialect and between languages.

Management (Manag)

Prerequisites for Upper-Division, Undergraduate Business Courses To enroll in any upper-division, undergraduate business course offered by the College, the undergraduate student must have completed the following prerequisite courses: six hours of principles of economics; six hours of principles of accounting; three hours of statistics, Math. 28 or Math. 14; three hours of calculus (Math. 128 or Math. 15) and have attained a 2.5 grade-point average. In addition, the student must have successfully completed six hours of composition and rhetoric. Exceptions to the above policy must be approved by the chairperson of the department offering the course.

101. *Introduction to Business Information Systems.* 3 hr. PR: C.S. 5 or equiv. Overview of business information systems. Introduces hardware, software, procedures, systems and human resources. Explores their integration and application in business information systems.

105. *Contemporary Management.* 3 hr. Management as a process involving the functions of planning, organizing, controlling, and directing. Provides an integrated view of the management discipline with emphasis on organizational behavior issues.

111. *Production and Quantitative Business Methods.* 3 hr. PR: Manag. 101, 105. Study of production/management systems, including models and techniques for managing production and distribution of goods and services.

160. *Management of Small Business.* 3 hr. PR: Manag. 105. Focusing on the management of small business, the course is designed both for those seeking employment in small business, and for those entering large organizations which deal with small firms as suppliers, customers, and competitors.

200. *Special Topics.* 1-4 hr. PR: Consent. Special topics relevant to management. (A maximum of nine semester hours in any special topics 200 course offered by the College of Business and Economics may be applied toward bachelor's and master's degrees.)

201. *Business Information Systems.* 3 hr. PR: Manag. 101 and 105. Use of EDP for decision making with emphasis on application in the functions of finance, marketing, personnel, accounting, and operations management.

205. *The Individual and the Organization.* 3 hr. PR: Manag. 105. Examination of how the individual, the group, and the organization interact to influence the behavior of the business organization and that of its human resources.

206. *Organizational Theory and Analysis.* 3 hr. PR: Manag. 105. Influences of structure on the behavior and dynamics of the business organization, including emphasis on becoming an effective manager.

211. *Advanced Production Management.* 3 hr. PR: Manag. 111. Integration of quantitative techniques and their application to production problems. Utilizes cases and projects.

212. *Management Science* I. 3 hr. PR: Manag. 105. Study and application of quantitative methods to business problems in which deterministic conditions prevail.

213. *Problems in Business Administration.* 1-3 hr. PR: Manag. 105 and 111. Selected management problems related to the total enterprise and emerging technostructure. Associated with an internship.

216. *Personnel Management.* 3 hr. PR: Manag. 105. Fundamental principles and practices related to the procurement, development, maintenance and utilization of human resources. Focus on areas such as human resource planning, selection training, performance appraising, compensation, safety and health and labor relations.

217. *Personnel and Compensation.* 3 hr. PR: Manag. 216. Designing and implementing total compensation systems in both private and public sectors. The emerging elements of total compensation systems are included providing insights into problems and opportunities for personnel.

218. *Focal Points in Management.* 1-3 hr. PR: Manag. 105. In-depth study of specialized management subjects, e.g., personnel interviewing, job descriptions, consulting, or organizational development. (Each subject is self-contained, spans one-third of a semester, and is valued at 1 credit hour.)

222. *Management Science* II. 3 hr. PR: Manag. 212 or consent. Study and application of quantitative methods to business problems in which probabilistic conditions prevail.

225. *Business Policy.* 3 hr. PR: Senior standing and consent. Integration of key components of the business curriculum. The case method is utilized to study a wide variety of policy issues including international and ethical concerns.

230. *Entrepreneurship.* 3 hr. PR: Consent. The role of the entrepreneur in business and society; includes an analysis of the individual entrepreneur, and investigates the nature and problems of establishing a new business enterprise.

260. *Practicum in Small Business.* 3 hr. PR: Consent. A practical training ground in the identification and solution of small business problems. Through interaction with the business community, students are exposed to the opportunities and difficulties of small business entrepreneurship.

299. *Independent Study.* 1-3 hr. PR: Consent. Students will develop and complete a program of specialized studies under the supervision of a cooperating instructor.

Marketing (Mrktg)

Prerequisites for Upper-Division, Undergraduate Business Courses To enroll in any upper-division, undergraduate business course offered by the College, the undergraduate student must have completed the following prerequisite courses: six hours of principles of economics; six hours of principles of accounting; three hours of statistics,

Math 28 or Math 14; three hours of calculus (Math 128 or Math 15) and attained a 2.5 grade-point average. In addition, the student must have successfully completed six hours of composition and rhetoric. Exceptions to the above policy must be approved by the chairperson of the department offering the course.

111. *Introduction to Marketing.* 3 hr. PR: Econ. 54, 55. Specific functional areas studied include sales management; consumer behavior; market research; product management; promotion management; distribution management; and price policies.

113. *Marketing Research.* 3 hr. PR: Mrktg. 111. Scientific approach to the solution of marketing problems with emphasis on research methods and techniques.

114. *Personal Selling.* 3 hr. PR: Mrktg. 111. Deals with interpersonal communication, influencing, and persuasion processes designed to satisfy customer and company needs; stresses the structure of sound sales presentations through lectures, persuasive presentations, and appraisal and correction of common selling errors.

115. *Distribution Channels.* 3 hr. PR: Mrktg. 111. Management of channel systems with emphasis on retail distribution, channel choice, strategies, control, and optimization within the context of role, power, conflict, and communications.

120. *Promotion Management.* 3 hr. PR: Mrktg. 111. An analysis of the promotional mix options; advertising; personal selling; and sales promotion, and the integration of these options into the marketing mix.

130. *Product and Price Policies.* 3 hr. PR: Mrktg. 111. Deals with the company's product offering as economic and marketing variables influencing product's price; stress on determination of product and price objectives, planning, implementation, and evaluation of results.

160. *Retail Management.* 3 hr. PR: Mrktg. 111. The organization and operating environment of retail firms. Special emphasis placed on consumer market segmentation and the marketing variables of merchandise mix, effective pricing, store location, and communication with suppliers and consumers.

200. *Special Topics.* 1-4 hr. PR: Mrktg. 111 or consent. Special topics relevant to marketing. (Maximum of nine semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward bachelor's and master's degrees.)

201. *Focal Points in Marketing.* 1-3 hr. PR: Mrktg. 111. In-depth study of specialized marketing subjects, e.g., franchising, tourism, packaging, or product development. (Each subject is self-contained, spans one-third of a semester, and is valued at 1 credit hour.)

203. *Sales Management.* 3 hr. PR: Mrktg. 114. Concentrates on the managerial responsibilities of sales managers for directing, motivating, and controlling a sales force plus the techniques of selling including handling objections and closing.

205. *Consumer Behavior.* 3 hr. PR: Mrktg. 111. The consumer decision process in a marketing framework. Emphasis on psychological and sociological concepts which influence the decision process.

207. *Business Logistics Management.* 3 hr. PR: Mrktg. 115 or consent. Examination of transportation, warehousing, materials handling, containerization, inventory control, purchasing, and warehouse location. Significant use made of problem solving with analytical tools.

210. *Industrial Marketing.* 3 hr. PR: Mrktg. 111. A study of marketing to three classes of customers: the industrial market, the institutional market, and government agencies.

211. *Marketing Management.* 3 hr. PR: Mrktg. 111; 12 hr. of marketing or consent. Simulation, through live and written case study, should sharpen skills as the student makes analytical evaluations of marketing problems.

299. *Independent Study.* 1-3 hr. PR: Consent. Students will develop and complete a program of specialized studies under the supervision of a cooperating instructor.

Mathematics (Math)

2. *Algebra.* I, II. 3 hr. PR: One year of high school algebra. Covers the material of high school algebra through quadratics. Credits earned in Math. 2 are not counted in the 64 hours required for graduation in pre- baccalaureate programs at Potomac State College. (Not offered on the Morgantown campus—several alternative options are available, including a non- credit, student-funded Pre-College Algebra Workshop, which is designed specifically to prepare students for College Algebra.)

3. *College Algebra.* I, II, S. 3 hr. PR: 2 units of algebra, 1 unit of geometry, and satisfactory performance on departmental placement examination or successful completion of the pre-college algebra workshop or its equivalent. (This course is not open to students who have credit for Math. 14 or its equivalent.) Review of the real number system and algebraic expressions, equations, inequalities, graphing, functions, basic matrix operations and properties, systems of equations, polynomials, counting, and probability.

4. *Plane Trigonometry.* I, II. 3 hr. PR: 2 units of algebra, 1 unit of geometry, or successful completion of the pre-college algebra workshop or its equivalent. (This course is not open to students who have credit for Math. 14 or its equivalent.) Trigonometric functions, identities, vectors, logarithms, complex numbers, and trigonometric equations.

11. *Symbolic Logic 2.* I, II. 3 hr. PR: Phil. 10. Continuation of Phil. 10, covering relational logic and identity. Additional topics may include alternative methods and systems of logic such as proof trees, axiom systems, alternative operators, modal and many-valued logics, and set theory.

14. *Pre-Calculus Mathematics.* I, II. 4 hr. PR: 2 units algebra and 1 unit geometry, and satisfactory performance on departmental placement test. (Not open to students who have credit for the equivalent of either Math. 3 or 4.) A treatment of algebra, analytic geometry, and trigonometry necessary for the study of calculus.

15. *Calculus.* I, II, S. 4 hr. PR: 2 units algebra, 1 unit geometry, 1/2 unit trigonometry, and satisfactory performance on departmental placement test or Math. 3 and 4 or Math. 14. Introduction to limits, continuity, derivatives, antiderivatives, definite integrals, and applications of the derivative.

16. *Calculus.* I, II, S. 4 hr. PR: Math. 15. Techniques of integration, applications of the definite integral, polar coordinates, indeterminate forms, infinite series.

17. *Multivariable Calculus.* I, II, S. 4 hr. PR: Math. 16. Introduction to solid analytic geometry, vector algebra, matrix algebra, calculus of several variables.

18. *Elementary Differential Equations.* I, II, S. 4 hr. PR: Math. 17. Ordinary differential equations, Laplace transforms, partial differential equations, Fourier series, applications.

23. *Introductory Concepts of Mathematics.* I, II. 3 hr. (Designed for non- science majors who do not need the techniques of mathematics for other course work in their programs.) Topics in modern mathematics.

26. *Discrete Mathematics.* 3 hr. PR: C.S. 16 and Math. 15. Traditional mathematics such as functions, relations, set theory, and graph theory; applications to computer science; switching circuits, Boolean algebra, and Karnaugh maps. Equiv. to C.S. 26.

28. *Finite Mathematics.* I, II. 3 hr. PR: Two units of algebra, 1 unit geometry, and S on departmental placement exam; or successful completion of pre-college algebra workshop or its equivalent. Review of real number system and algebraic expressions, equations, inequalities, systems of equations and inequalities, graphing, functions, mathematics of finance, basic matrix operations, linear programming. This course is not open to students who have credit for Math 3, Math 14, or equivalents.

33. *Introductory Mathematics for Elementary Teachers.* I, II. 3 hr. PR: 1 unit high school algebra and satisfactory performance on Arithmetic Entrance Test. (For elementary education majors only.) Structure of the number systems, techniques of arithmetic computation derived from the properties of the real number system.

34. *Introductory Mathematics for Elementary Teachers.* I, II. 3 hr. PR: Math. 33 and satisfactory performance on Arithmetic Entrance Test. (For elementary education majors only.) Techniques of arithmetic computation derived from the properties of the real number system, logic, informal, geometry and the metric system.

128. *Introduction to Calculus.* I, II. 3 hr. PR: Math. 3, Math 14, Math 28, or consent. For students in other disciplines needing calculus for applications. Limits of sequences and functions, continuity, derivatives, and integrals of polynomials, rational functions, and exponential and logarithmic functions, partial derivatives, maxima and minima.

131. *Algebra and Geometry for Elementary Teachers.* I, II. 3 hr. PR: Math. 34 and satisfactory performance on Arithmetic Entrance Test. (For elementary education majors only.) Algebra, real numbers, and geometry applied to graphing, problem solving, probability and statistics, calculations, and the computer.

133. *Introductory Modern Algebra for Teachers.* II. 3 hr. PR: Calculus or consent. (Not open to students with credit for Math. 141.) The basic number systems, decomposition of integers, modular systems, groups, rings, domains, fields, polynomial rings, matrices, vector spaces, linear transformations.

138. *Modern Geometry for Teachers.* I. 3 hr. PR: Math. 16 or consent. (For prospective high school mathematics teachers.) Foundations of geometry. Special topics from Euclidean, projective, and non-Euclidean geometries.

141. *Introduction to Algebraic Structures.* II. 3 hr. PR: Math. 163 or consent. A study of groups, rings, and fields together with their substructures, quotients and products, morphisms; the fundamental homomorphism theorems.

143. *Introduction to Linear Algebra.* II. 3 hr. PR: Math. 17. Introduction to vector spaces as an algebraic system. Emphasis on axiomatic development and linear transformation. Examples from geometry and calculus.

161. *Mathematical Logic* 1. I. 3 hr. PR: Phil. 10 or consent. The axiomatic method, "naive," and axiomatic set theory, Russell's Paradox, infinity and uncountability, the "reduction" of mathematics to set theory, introduction to the consistency and completeness of logic, and Godel's proof of the incompleteness of arithmetic. (Equiv. to Phil. 106.)

163. *Introduction to the Concepts of Mathematics.* I, II. 3 hr. PR: Math. 16 or consent. Elementary logic, basic theory, relations and functions, equivalence relations and decomposition of sets, order relations, cardinality. Emphasis on learning to prove theorems.

168. *History of Mathematics.* I. 3 hr. PR: Math. 15. Development of mathematics through calculus, with emphasis on mathematical theories and techniques of each period and their historical evolution.

181. *Topology.* II, S. 3 hr. PR: Math. 163 or consent. Introduction to metric and topological spaces. Topics include: continuity, convergence, separation, compactness, and connectedness.

213. *Partial Differential Equations.* II. 3 hr. PR: Math. 18. Introduces students in mathematics, engineering, and the sciences to methods of applied mathematics. First and second order equations, canonical forms, wave, heat and Laplace's equations, representation of solutions.

215. *Applied Modern Algebra.* II. 3 hr. PR: Consent. Finite fields, algebraic coding theory, Boolean algebras, monoids, finite state and Turing machines.

217. *Applied Mathematical Analysis.* II. 3 hr. PR: Math. 18. The algebra and differential calculus of vectors, solution of the partial differential variable.

219. *Seminar in Applied Mathematics.* I, II. 1-12 hr.

220. *Numerical Analysis 1.* I, II. 3 hr. PR: Math. 17 (or both Math. 16 and C.S. 120) and a programming language. Computer arithmetic, roots of equations, interpolation, Gaussian elimination, numerical integration and differentiation. Numerical solution of initial value problems for ordinary differential equations. Least square approximations. (Equiv. to C.S. 220.)

221. *Numerical Analysis 2.* II. 3 hr. PR: C.S. 220 or Math. 241 or consent. Solutions of linear systems by direct and iterative methods. Calculation of eigenvalues, eigenvectors, and inverses of matrices. Applications to ordinary and partial differential equations. (Equiv. to C.S. 221.)

224. *Mathematics of Compound Interest.* II. 3 hr. PR: Math. 16 or 128. A problem-solving course focusing on the measurement of interest, annuities, amortization schedules, and sinking funds, and the valuation of bonds and other securities.

226. *Mathematical Statistics.* II. 3 hr. PR: Math. 16 or consent. (Designed for mathematics teachers.) Frequency distributions, averages, probability, populations, samples, probability distributions, estimations, hypothesis testing. Although no previous knowledge of computer language is assumed, the computer will be used in this course.

228. *Discrete Mathematics 2.* II. 3 hr. PR: Math. 16 and 120 or equiv. Applications of discrete mathematics to computer science. Methods of solving homogeneous and non-homogeneous recurrence relations using generating functions and characteristic equations; digraphs to analyze computer algorithms; graph theory and its ramifications to computer algorithms. (Equiv. to C.S. 228.)

231, 232. *Introduction to Mathematics for the Elementary Teacher.* I, II. 3 hr. per sem. PR: Math. 34 or consent. (Not open to students who have credit for Math. 131.) (For in-service elementary mathematics teachers.) Systems of numeration; sets, relations, binary operations, the algebraic structure of various number systems; the notions of length, area, and volume; coordinate geometry.

241. *Applied Linear Algebra.* I, II, S. 3 hr. PR: Math. 17; Math. 18 or consent. Matrix algebra with emphasis on algorithmic techniques and applications to physical models. Topics include solution of large systems of equations, orthogonal projections and least squares, and eigenvalue problems.

251, 252. *Introduction to Real Analysis.* I, II. 3 hr. per sem. PR: Math. 163 or consent. A study of sequences, convergence, limits, continuity, definite integral, and derivative, differentials, functional dependence, multiple integrals, sequences and series of functions.

255. *Advanced Real Calculus.* S. 3 hr. PR: Math. 18 or consent. Limits, series, metric spaces, uniformity, integrals.

256. *Complex Variables.* II. 3 hr. PR: Math. 18. Complex numbers, functions of a complex variable; analytic functions; the logarithm and related functions; power series; Laurent series and residues; conformal mapping and applications.

269. *Advanced Topics in Mathematics.* I, II, S. 3-9 hr. PR: Consent. An independent but directed study program the content of which is to be mutually agreed upon by the individual student and instructor.

Mechanical and Aerospace Engineering (MAE)

NOTE: Courses in M.A.E. are open only to engineering majors except those marked with an asterisk (*).

12. *Introduction to Aerospace Engineering.* 3 hr. PR: Math. 15, Engr. 2. Fundamental physical quantities of a flowing gas, standard atmosphere, basic aerodynamic equations, airfoil nomenclature, lift, drag, and aircraft performance are studied. Digital computer usage applied to aerodynamic and performance problems and aircraft design. 3 hr. lec.

32. *Introduction to Mechanical Engineering.* 3 hr. PR: Sophomore standing in Engineering. Introduction to principles and techniques in mechanical engineering. 1 hr. lec.; 4 hr. lab.

41. *Statics.* 3 hr. PR: Math. 15. Engineering applications of equilibrium of forces. Vector operations, couple and moment of force, resultants (two and three dimensions), center of gravity and center of pressure, static friction, free body diagrams, equilibrium, trusses and frames. 3 hr. lec.

42. *Dynamics.* 3 hr. PR: M.A.E. 41, Math. 16. Newtonian dynamics of particles and rigid bodies. Engineering applications of equations of motion, work and energy, conservative forces, impulse and momentum, impulsive forces, acceleration in several coordinate systems, relative motion, instantaneous centers, and plane motion. 3 hr. lec.

43. *Mechanics of Materials.* 3 hr. PR: M.A.E. 41, Math. 16. Stress, deformation, and failure of solid bodies under the action of forces. Internal force resultants, stress, strain, Mohr's circle, mechanical properties of materials, generalized Hooke's Law. Axial, bending and buckling loads and combinations. 3 hr. lec.

53. *Dynamics and Strength Laboratory.* 1 hr. PR: M.A.E. 41; Coreq.:MAE 42,43. Experiments will cover basic concepts in dynamics and strength of materials. Rigid body behavior, system acceleration, material properties. 3 hr. lab.

100. *Inspection Trip.* (Credit.) PR: Senior standing.

101. *Thermodynamics.* 3 hr. PR: Phys. 11, Math. 16. Principles of thermodynamics; properties of gases and vapors; vapor cycles; internal combustion engines cycles; and refrigeration. Not open to students majoring in mechanical engineering. 3 hr. lec.

104. *Analysis of Physical Systems.* 3 hr. PR: Math. 18, M.A.E. 42 or consent. Modeling of physical system behavior using analytical techniques. Laplace transforms, complex variables, mapping, and matrix methods applied to mechanical system, fluid flow, and structural analyses. 3 hr. lec.

113. *Applied Kinematics and Dynamics.* 3 hr. PR: M.A.E. 42. Analysis of motion and forces in linkages, gears, cams and other basic mechanisms. Synthesis of linkages, cam, and gear profiles. Techniques introduced include algebraic, graphic, and numerical modeling. 3 hr. lec.

114. *Fluid Mechanics.* 3 hr. PR: M.A.E. 41. Fluid statics, laminar and turbulent flow of compressible and incompressible fluids, flow measurements, open channel flow, and kinetics of fluids. 3 hr. lec.

115. *Experimental Fluid Dynamics* 1. 3 hr. PR: M.A.E. 117. Subsonic and supersonic wind tunnel testing methods and practice. Experiments include the following measurements: pressure distribution of bodies, boundary layer determination, turbulence measurements, force tests, and stability and performance determinations. Corrections for scale and jet boundary effects. Test design, data analysis, and engineering report preparation. 2 hr. lec., 3 hr. lab.

116. *Fluid Dynamics 1.* 3 hr. PR: Math. 18, M.A.E. 114. Kinematics and dynamics of vector fluid flow fields; perfect fluid theory of thin airfoils; lifting line theory for finite span wings. 3 hr. lec.

117. *Fluid Dynamics 2.* 3 hr. PR: M.A.E. 140 and 114 or 144. Compressible, nonviscous fluids analysis and design; isentropic flow, Prandtl-Meyer expansions, shock waves, airfoils in compressible flow, and small perturbation theory. Introduction to viscous fluid dynamics and boundary layer theory. 3 hr. lec.

120. *Flight Vehicle Design.* 3 hr. PR: M.A.E. 146. Preliminary design of flight vehicles with regard for performance and stability requirements, considering aerodynamics, weight and balance, structure arrangement, configuration, guidance, and propulsion effects. Layout drawings and calculations are combined in a preliminary design report. 1 hr. lec., 6 hr. lab.

122. *Vibrations and Controls.* 3 hr. PR: M.A.E. 113. Fundamentals of vibration and control theories. Free and forced vibration of single- and multiple-degree of freedom systems. Response and stability analysis of linear control systems. 3 hr. lec.

132. *Applied Strength of Materials.* 3 hr. PR: M.A.E. 43. Overview of stress, strain and deflection; energy methods in deflection and column design; theories of failure and design, fatigue considerations in design, torsion, combined loadings, factor of safety and material considerations in design. 3 hr. lec.

135. *Design of Mechanical Elements.* 3 hr. PR: M.A.E. 132. Mechanical design of such mechanical elements as screws and fasteners, welded joints, springs, contact and journal bearings, gears, shaft design, couplings, brakes and clutches, and ropes and chains. 3 hr. lec.

140. *Engineering Thermodynamics.* 3 hr. PR: Phys. 11, Math. 16. First and second laws of thermodynamics; energy equations; properties of gases and vapors; availability and thermodynamic relations. 3 hr. lec.

141. *Engineering Thermodynamics.* 3 hr. PR: M.A.E. 140 and Chem. 16. Continuation of M.A.E. 140. Gas and vapor cycles, mixtures of gases and vapors, chemical reactions, and an introduction to fluid mechanics. 3 hr. lec.

144. *Introduction to Fluid Mechanics.* 3 hr. PR: M.A.E. 140. Basic governing equations for fluid flow, emphasizing integral control volume formulations. Fluid statics, Bernoulli equation, momentum, energy and mass conservation, dimensional analysis, viscous effects in internal and boundary layer flows, laminar and turbulent flow.

145. *Thermal and Fluids Laboratory.* 1 hr. PR: M.A.E. 140. Experiments demonstrating fundamental concepts of thermal-fluid systems; hydrostatics, dynamic pressure forces, dimensional analysis, pipe pressure losses, drag on external bodies, flow measurements devices, engine performance, fan and turbine performance, saturated vapor curve determination. 3 hr. lab.

146. *Flight Mechanics 1.* 4 hr. PR: M.A.E. 42, 116. Fundamentals of aircraft static and dynamic stability and control; aerodynamic design of control surfaces. General equations of unsteady aircraft motion. Introduction to aerodynamic transfer functions and automatic control systems. 4 hr. lec.

150. *Flight Vehicle Propulsion.* 3 hr. PR: M.A.E. 117. Equilibrium combustion thermodynamics. Quasi one-dimensional flow with friction and total temperature change. Thermodynamics of aircraft engines. Aerodynamics of inlets, combustors, nozzles, compressors, and turbines. Performance of rockets. Ideal rocket analysis. 3 hr. lec.

158. *Heat Transfer.* 3 hr. PR: M.A.E. 140 and 144 or 114. Steady state and transient conduction. Thermal radiation. Boundary layer equations for forced and free convection. 3 hr. lec.

160. *Flight Vehicle Structures 1.* 3 hr. PR: M.A.E. 43. Strength of thin walled structures in bending, shear, and torsion. Strain energy and application of Castigliano's theorem to bending of rings and curved bars, and to anaylsis of frames. Principle of virtual work and its application to beam and truss deflections and to statically indeterminate structures. 3 hr. lec.

161. *Flight Vehicle Structures 2.* 3 hr. PR: M.A.E. 160. Tension fields and the design of Wagner beam. Buckling of compression structures; bars, sandwich columns, wrinkling in sandwich construction, plates, shells and stiffened structural analysis. Failure by fatigue and fracture. 3 hr. lec.

162. *Design of Flight Structures 1.* 3 hr. PR: M.A.E. 161. Structural design and analysis of flight vehicle members. Layout and detail design of specified components and systems. 1 hr. lec., 6 hr. lab.

165. *Experimental Flight Vehicle Structures.* 2 hr. PR: M.A.E. 160. Tension properties and stress-strain curves of materials. Strain gage circuitry. Elastic and inelastic column buckling testing and theoretical comparison. Structural dynamics testing of vibrating beams. Shear tests by torsion, and torsion of thin-walled members. Observation of photoelastic and Moire fringe pattern techniques, and an introduction to fatigue testing. 1 hr. lec., 3 hr. lab.

170.* *Aviation Ground School.* 3 hr. Nomenclature of aircraft, aerodynamics, civil air regulations, navigation, meteorology, aircraft, and aircraft engines. May serve as preparation for private pilot written examinations. 2 hr. lec., 2 hr. lab.

171. *Mechanical Engineering Analysis.* 3 hr. PR: Math. 17. Numerical and computer techniques applied to the solution of mechanical engineering problems, such as root finding, systems of linear equations, curve fitting, numerical integration, and differential equations. 3 hr. lec.

181. *Mechanical Engineering Instrumentation.* 3 hr. PR: Math. 18. Basic elements of general measurement systems. Principles of first and second order system input/output behavior. Study of common intermediate and output devices. Data collection and processing using microcomputers. Design of a specific measurement system. 2 hr. lec., 3 hr. lab.

183. *Principles of Engineering Design.* 3 hr. PR: Penultimate Semester. Topics include design problems in mechanical engineering dealing with analytical and experimental methodologies in fluid, thermal, and structural areas, decision-making techniques, optimization, computer-aided design and economic considerations. 6 hr. lab.

184. *Engineering Systems Design.* 3 hr. PR: M.A.E. 183. Identification and solution of challenging engineering problems through rational analysis and creative synthesis. Planning, designing, and reporting on complex systems on individual and group basis. 6 hr. lab.

200. *Advanced Mechanics of Materials 1.* 3 hr. PR: M.A.E. 43 or consent. Advanced topics in applied stress analysis; stress concentrations, strain energy, beams, thick-walled cylinders, torsional warping, fracture. 3 hr. lec.

210. *Kinematics.* 3 hr. PR: M.A.E. 113 and Math. 18 or consent. Geometry of constrained motion, kinematics synthesis and design, special linkage. Coupler curves, inflection circle, Euler-Savary equation, cubic of stationary curvature and finite displacement techniques. 3 hr. lec.

215. *Experimental Fluid Dynamics 2.* 3 hr. PR: M.A.E. 115. Continuation of M.A.E. 115 with increased emphasis on dynamic measurements. Shock tube/tunnel and subsonic and supersonic measurements. Experiments include optical techniques, heat transfer to models, and viscous flow measurements. Error analysis of test data. 2 hr. lec., 3 hr. lab.

216. *Applied Aerodynamics.* 3 hr. PR: M.A.E. 116. Chordwise and spanwise airload distribution for plain wings, wings with aerodynamic and geometric twist, wings with deflected flaps, and wings with ailerons deflected. Section induced drag characteristics. 3 hr. lec.

220. *Guided Missile Systems.* 3 hr. PR: M.A.E. 117 and/or Conc.: M.A.E. 150. Design philosophy according to mission requirements. Preliminary configuration and design concepts. Aerodynamic effects on missiles during launch and flight. Ballistic missile trajectories. Stability determination by analog simulation. Performance determination by digital and analog simulation. Control, guidance, and propulsion systems. Operational reliability considerations. 3 hr. lec.

226. *Mechanics of Composite Materials.* 3 hr. PR: Math. 17, M.A.E. 43. Fundamental methods for structural analysis of fiber reinforced composites. Particularities of composite applications in design and manufacturing of structural components: performance tailoring, failure criteria, environmental effects, joining and processing. 3 hr. lec.

232. *V/STOL Aerodynamics.* 3 hr. PR: M.A.E. 117. Fundamental aerodynamics of V/STOL aircraft. Topics include propeller and rotor theory, helicopter performance, jet flaps, ducted fans, and propeller-wing combinations. 3 hr. lec.

236. *Systems Analysis of Space Satellites.* 3 hr. PR: Senior standing. Introduction to engineering principles associated with analysis and design of space satellites. Emphasis on the inderdisciplinary nature of satellite systems analysis. 3 hr. lec.

240. *Problems in Thermodynamics.* 3 hr. PR: M.A.E. 141 or consent. Thermodynamic systems with special emphasis on actual processes; problems designed to strengthen the background of the student in the application of the fundamental thermodynamic concepts. 3 hr. lec.

241. *Flight Mechanics 2.* 3 hr. PR: M.A.E. 146. Fundamental concepts of feedback control system analysis and design. Automatic flight controls, and human pilot plus airframe considered as a closed loop system. Stability augmentation. 3 hr. lec.

242. *Flight Testing.* 3 hr. PR: M.A.E. 146. Applied flight test techniques and instrumentation, calibration methods, determination of static performance characteristics, and introducion to stability and control testing based on flight test of Cessna Super Skywagon airplane. Flight test data analysis and report preparation. 1 hr. lec., 6 hr. lab.

243. *Bioengineering.* 3 hr. PR: M.A.E. 43; Phys. 201 or consent. Introduction to human anatomy and physiology using an engineering systems approach. Gives the engineering student a basic understanding of the human system so that the student may include it as an integral part of the design. 3 hr. lec.

244. *Introduction to Gas Dynamics.* 3 hr. PR: M.A.E. 144 or consent. Fundamentals of gas dynamics, one-dimensional gas dynamics and wave motion, measurement, effect of viscosity and conductivity, and concepts of gas kinetics. 3 hr. lec.

249. *Space Mechanics.* 3 hr. PR: Math. 18, M.A.E. 42. Flight in and beyond earth's atmosphere by space vehicles. Laws of Kepler and Orbital theory. Energy requirements for satellite and interplanetary travel. Exit from and entry into an atmosphere. 3 hr. lec.

254. *Applications in Heat Transfer.* 3 hr. PR: M.A.E. 158. Application of basic heat transfer theory and digital computation techniques to problems involving heat exchangers, power plants, electronic cooling, manufacturing processes, and environmental problems. 3 hr. lec.

262. *Internal Combustion Engines.* 3 hr. PR: M.A.E. 101 or 141. Thermodynamics of internal combustion engine; Otto cycle; Diesel cycle, gas turbine cycle, two- and four-cycle engines, fuels, carburetion, and fuel injection; combustion; engine performance, supercharging. 3 hr. lec.

264. *Heating, Ventilating, and Air Conditioning.* 3 hr. PR: M.A.E. 141 or consent. Methods and systems of heating, ventilating, and air conditioning of various types of buildings, types of controls and their application. 3 hr. lec.

265. *Aeroelasticity.* 3 hr. PR: M.A.E. 160. Vibrating systems of single degree and multiple degrees of freedom, flutter theory and modes of vibration, torsional divergence and control reversal. 3 hr. lec.

270. *Microprocessor Applications in Mechanical Engineering.* 3 hr. PR: M.A.E. 181. Fundamentals of programming and interfacing a microprocessor. Hands-on, hardware oriented. Assembly language and BASIC programming. RAM, EPROM, analog to digital and digital to analog converters, stepper motors, encoders, AC devices. Interfacing project required. 3 hr.lec.

275. *Computer-Aided Design: Applications.* 3 hr. PR: M.A.E. 132 or 161; Coreq.: M.A.E. 158. CAD fundamentals. User-computer interface and interactive programming for rational design. Computational tools, finite elements and modeling techniques. Interactive graphics, pre-post processor applications. Case studies: conceptual-preliminary-detail iterative design and analysis. 3 hr. lec.

280. *Aerospace Problems.* 1-6 hr. PR: Upper-division and graduate standing.

282. *Engineering Acoustics.* 3 hr. PR: Math. 18 or consent. Theory of sound propagation and transmission. Important industrial noise sources and sound measurement equipment. Selection of appropriate noise criteria and control methods. Noise abatement technology. Laboratory studies and case histories. 3 hr. lec.

284. *Applied Feedback Control.* 3 hr. PR: M.A.E. 122 or consent. Application of automatic control theory. Transfer functions and block diagrams for linear physical systems. Proportional, integral, and derivative controllers. Transient and frequency response using Laplace transformation. 3 hr. lec.

285. *Thesis.* 2-6 hr. PR: Senior standing and consent.

286. *Design of Robotic Systems.* 3 hr. PR: M.A.E. 113 or consent. Mechanical automation design associated with robotic systems, including economic justification and ethics. Geometric choices and controller specifications for programmable manipulators. Workstation strategies such as CNC and CIM for computer-based flexible manufacturing. 3 hr. lec.

290. *Seminar.* 1-6 hr. PR: Junior, senior, or graduate standing, and consent.

291. *Introduction to Research.* 1-3 hr. PR: Senior standing and consent. Methods of organizing theoretical and experimental research. Formulation of problems, project planning, and research proposal preparation.

292. *Research Problems.* 2-6 hr. PR: M.A.E. 291 or consent. Performance of the research project as proposed in M.A.E. 291. Project results are given in written technical reports, with conclusion and recommendations.

294. *Special Topics.* 1-6 hr. PR: Junior, senior, or graduate standing, and consent.

299. *Special Problems.* 1-6 hr. PR: Consent.

Military Science (Mil. Sc.)

Army ROTC

First Year

1.2 hr. The organization and development of the U.S. Army and ROTC from its inception to the present. The structure and role of the U.S. defense establishment with emphasis on the broad range of American civil-military relations.

2.2 hr. The development of American military institutions, policies, experience, and traditions in peace and war are discussed. Past wars are examined in the perspective of modern military thought.

Second Year

3.2 hr. Introduction to basic leadership and management with emphasis on the fundamental concepts and skills required of today's citizen- soldier.

4.2 hr. Continued instruction in basic fundamentals of leadership and management, with emphasis on the military application of these fundamentals. Introduction to small-unit tactics and organization.

Third Year

105.3 hr. PR: Basic course or equiv. (Equivalent credit may be granted by the WVU Director of Admissions and Records and the Professor of Military Science on the basis of prior military service, or ROTC training other than courses in military science taken at WVU.) Examines the requirements for military training and the psychological and technical aspects of effective instruction. Additionally, the military career system and the occupational specialties options available are reviewed.

106.3 hr. PR: Mil. S. 105 or consent. Race relations/drug abuse seminars are conducted to familiarize students with the leadership techniques involved in coping with these unique social problems. Additionally, practical training is conducted in squad- and platoon-level tactics. The course is designed to prepare the student for Advanced Camp.

Fourth Year

107. 3 hr. PR: Mil. S. 105 and 106 or consent. Stresses the responsibilities of an officer and affords leadership experience as a cadet leader. Military staff procedures, military law, and military organizations, which prepare the student for future service, are studied.

108. 3 hr. PR: Mil. S. 107 or consent. Advanced leadership techniques, unit operations, and personnel management problems are discussed in seminars. The military role in United States foreign policy and world affairs is examined.

191. *Special Topics.* I, II, S. 1-!3 hr. PR:Consent. Investigation of topics not covered in regularly scheduled courses.

Mineral and Energy Resources (MER)

97. *Energy Resource Economics.* I, II. 3 hr. Dilemmas posed for developing and modern societies by rising energy demands amid concerns for the world's environment. Economics of fuel sources and technologies, and historical and new concerns over resource scarcities.

98. *National Energy Policy.* II. 3 hr. Resource and energy policy problems on a national level, including mineral import quotas, prorationing, federal tax and land-law policy, leasing, mineral research and education, health, and social concerns.

101. *Principles of Resource and Energy Economics.* II. 3 hr. PR: Third-year standing. Analyzes problems important or peculiar to mineral industry economics: exhaustion, externalities, risks, production cycle, industry structure, pricing, role of minerals in development and trade, resource planning. Energy, metals, industrial minerals. 3 hr. lec.

245/325. *Energy Economics.* I, II. 3 hr. Analysis of the energy sector and its relationship to the rest of the economy. Emphasis on current policy issues: OPEC, energy security, deregulation, hard vs. soft paths, impediments to coal use. (May not be taken for both undergraduate and graduate credit.) 3 hr. lec.

260/360. *Resource Appraisal and Exploration Decisions.* I. 3 hr. Appraisal techniques for mineral resources including deposit, project, and regional evaluation. Exploration decisions and Bayesian analysis. (May not be taken for both undergraduate and graduate credit.) 3 hr. lec.

Mineral Processing Engineering (MPE)

218. *Mineral Processing.* II. 4 hr. PR: Math. 17 or consent. Application of particle characterization, particle behavior in fluids, industrial sizing, and size reduction fluid-solid separations are discussed. Introduction to froth flotation, and magnetic and electrostatic separation for the concentration of minerals is described. 3 hr. lec., 1 hr. lab.

219. *Surface and Interfaces.* I. 3 hr. PR: M.P.E. 218. Surface tension phenomena, surface thermodynamics, electrical double layer, polarized and nonpolarized electrodes, insoluble monolayers, adsorption phenomena, colloidal foams and emulsion consideration as applied to mineral surfaces.

220. *Mineral Flotation.* II. 4 hr. PR or Conc.: M.P.E. 219. The application of surface phenomena for the beneficiation of minerals, including naturally hydrophobic, insoluble oxides, and semi-soluble and soluble minerals. Activation and depression of sulfide minerals. Engineering and design of flotation circuits. 3 hr. lec., 1 hr. lab.

221. *Hydrometallurgy.* II. 4 hr. PR: Chem. 141, 142; Conc.: M.A.E. 101. Electrochemical aspects and rates of solid-liquid reactions as applied to leaching, concentration and recovery of minerals. Solvent extraction, ion exchange, electrowinning, and other current industrial processes.

222. *Rate Phenomena in Extractive Metallurgy.* II. 3 hr. PR or Conc.: M.A.E. 114, Chem. 141, 142. Momentum heat and mass transfer phenomena theory, concepts of boundary layers and techniques of process analysis as applied to metallurgical reaction systems.

224. *Mineral Problems.* I, II. 1-6 hr. PR: Senior or graduate standing or consent. Special problems considered in minerals beneficiation and processing, including choices among design and research projects in coal preparation, coal conversion, hydro-and extractive metallurgy or mineral economies.

250. *Control Systems in Mineral Processing.* II. 3 hr. PR: Junior standing in mineral processing engineering. Instrumentation and automatic control systems used in today's mineral processing technology are studied including data recording and control and process optimization.

270. *Design and Synthesis.* I. 3 hr. PR: M.P.E. 217, 219; M. 281. The logic and quantitative tools required for synthesizing mineral processing systems are used on a realistic problem by students working independently. Specific attention given to economic and environmental implications.

Minerals (M)

1. *Mineral Engineering Problem Solving.* I. 3 hr. An introduction to Mineral Engineering requirements and techniques; supply, demand, and conservation of mineral energy resources; rock and mineral identification; topographic and geologic mapping; and, the making of graphs, charts, and other engineering illustrations.

2. *Mineral Engineering Problem Solving.* II. 3 hr. Principles of surveying and introduction to FORTRAN programming. 2 hr. lec., 3 hr. lab.

250. *Evaluation of Capital and Operating Costs.* I, II. 3 hr. PR: Math. 18 or consent. Estimating capital and operating costs of mineral industries. Evaluation of potential investments, comparisons of investment alternatives, estimation of profitability, and payout of new ventures. Special problems of investment decisions in mining, petroleum, and other facets of the mineral industries.

281. *Applied Mineral Computer Methods.* I, II. 3 hr. PR: M. 2; Math. 16. Problem solving in mineral processing, mineral resources, mining, and petroleum engineering. Emphasis on applications using various computing technologies.

Multidisciplinary Studies (MDS)

2. *Genetics, Society and Human Affairs.* II. 3 hr. (May be credited to University LSP Cluster B or C.) Origin of life, selection, mutation, eugenics, genetic engineering, genetics and evolution, genetics and medicine, genetics and politics, decision making, social and ethical issues in human genetics. For students interested in heredity and heritage.

40. *Introduction to Women's Studies.* I, II. 3 hr. (May be credited to University LSP Cluster A or B.) A study of the major contexts in which woman's identity has been and is defined and of the relationships between these definitions and the roles of history of women (and men) in society and culture. (Also listed as Wm. St. 40.)

50. *Introduction to Gerontology.* I, II. 3 hr. PR: Sophomore standing. (May be credited to University LSP Cluster B.) Introduction to biological, psychological, and sociological processes and problems associated with human aging, with attention to selected social policies.

60. *Human Sexuality.* I, II. 3 hr. (May be credited to University LSP Cluster B or C.) A study of the biological, behavioral, and societal aspects of sexuality. Issues considered include: changing fecundity; socio-legal implications; sex roles; veneral disease; populations; erotica; aging; dysfunctions; decision-making skills for sex-related issues.

70. *The Human Environment.* I. 3 hr. (May be credited to University LSP Cluster B or C.) An examination of some of the facets of the environment which most directly affect human welfare. Central focus on environmental deterioration and corrective public policies. An interdisciplinary, non- prerequisite course for all students in the University.

80. *Special Topics.* I, II. 1-3 hr.

90. *Society and Food.* I, II. 3 hr. (May be credited to University LSP Cluster B or C.) Exploration on a global basis of interactions of man and environment as reflected in food production systems. Relation of food supply and use to development or maintenance of social and political institutions.

91. *Introduction to Technology and Society 1.* I or II. 3 hr. (May be credited to University LSP Cluster A or C.) A team-taught introduction to technology (its nature and goals) and society (its nature and goals) in the Victorian era.
92. <Introduction to Technology and Society 2. >I or II. 3 hr. PR: MDS 91. (May be credited to University LSP Cluster B.) Continuation of MDS 91.

99. *Creativity, Discovery, Innovation.* 3 hr. Creativity as process; critical thinking and problem solving as enhancements of creative imagination; relationships of creativity to society and technology.

100. *Introductory African and African-American Studies.* 3 hr. An interdisciplinary introduction to the histories, economies, cultural and artistic heritages; political and social formations of Africans and African- Americans; focusing on the relationships between the two experiences.

250. *Issues in Gerontology.* I, II. 3 hr. PR: Consent. Analysis of societal aspects of aging and exploration of current issues in gerontology. Relating of gerontological concepts to previous course work and field experience.

Music (Music)

10. *Music Convocation.* (Required for all music majors for six semesters. May be repeated). Faculty, guest artist, and student performances, lectures and forums on major musical issues and topics.

19. *Introduction to Opera Theatre.* I, II. 0-4 hr. (May be repeated for credit; max. 16 hr.) PR: Consent. Practical work in all aspects of lyric theatre production. Development of lyric theatre stage technique through movement studies, performance in major and minor roles and operatic scenes, and advanced production techniques

30. *Introduction to Music.* I, II. 3 hr. (Not open to music majors.) Introductory course designed to develop an appreciation and understanding of the significance of music as a fine art, and to help the student develop intelligent listening habits.

31. *Introduction to Music Listening.* I. 1 hr. (For music majors only.) Guided listening to important works from all historical periods with emphasis upon the development of awareness of stylistic traits, such as harmonic idiom, melodic structure, tonal movement, texture, rhythm, etc.

33. *Music Literature 1.* I. 3 hr. PR: Music 31 (for Music majors); Music 30 (for non-Music majors) or consent. Survey of Western Art Music in its historical context from the Christian era through the Enlightenment.

34. *Music Literature 2.* 3 hr. PR: Music 31 and 33 (for Music majors); Music 30 (for non-Music majors); English 2 or consent. Survey of Western Art music in its historical context from the Enlightment to the present; West African music, and jazz.

41. *Fundamental Music Skills.* I, II. 2 hr. (Not open to music majors.) Development of skills for future classroom teachers. Basic understanding of rhythm, dynamics, tone color, pitch, and form.

42. *Teaching Elementary School Music.* I, II. 2 hr. PR: Music 41 or consent. (Not open to music majors.) Leading and teaching of songs. Guiding children in conceptual development in music through activities approach.

43. *Classroom Instruments and Guitar.* 2 hr. (For vocal and general music education majors only.) Beginning instruction on guitar. Performance in and arranging for Orff and recorder ensembles. Bi-weekly lab. 2 hr. lec.

44. *Woodwind Instrument Pedagogy.* I, II. 2 hr. Techniques of teaching woodwind instruments, including playing techniques, pedagogical techniques appropriate for young players, methods, materials, maintenance, and repair.

45. *Brass Instrument Pedagogy.* I, II. 2 hr. Techniques of teaching brass instruments, including playing techniques, pedagogical techniques appropriate for young players, methods, materials, maintenance, and repair.

46. *String Instrument Pedagogy.* I, II. 2 hr. Techniques of teaching string instruments, including playing techniques, pedagogical techniques appropriate for young players, methods, materials, maintenance, and repair.

47. *Percussion Instrument Pedagogy.* I, II. 2 hr. Techniques of teaching percussion instruments, including playing techniques, pedagogical techniques appropriate for young players, methods, materials, maintenance, and repair.

48. *Strings, Percussion, and Classroom Equipment.* 2 hr. (For vocal and general music education majors only.) Techniques of teaching string and percussion instruments, and instruction in the applications and operation of classroom electronic equipment. Bi-weekly lab.

49. *Vocal Pedagogy.* I. 2 hr. PR: Two semesters of voice study. Techniques of voice culture; applicable to school choral activities and instruction of young singers.

51. *Fundamentals of Conducting.* I. 2 hr. PR: Music 63 and 64. Basic conducting skills, including beat patterns, expressive gestures, cues, and the fermata; terminology; tempo changes; and the mechanics of score reading.

52. *Conducting and Score Interpretation.* II. 2 hr. PR: Music 51 or consent. Developments of techniques of score study; rehearsal preparation. Rehearsals of laboratory ensemble. Study of string, wind, and choral scores.

53. *Conducting and Rehearsing.* I, II. 2 hr. PR: Music 52 or consent. Intensive study of wind, choral, and orchestral scores, rehearsed by the laboratory ensemble. Conducting of a major performance ensemble in rehearsal.

60. *Introduction to Music Composition.* 2 hr. PR: Consent. (Open to music composition majors only.) Development of creativity in musical composition. May be repeated for credit. 2 hr. lec.

61. *Aural Theory.* I. 2 hr. The four aural theory courses (Music 61, 63, 65, and 67) form a unit of instruction devoted to the development of aural skills such as sight-singing, melodic and harmonic dictation, identification of chords, chord progressions, modulations, and non-harmonic tones.

62. *Written Theory.* I. 2 hr. Elementary theory (scales, keys, intervals, triads, and dominant seventh chords) and introduction to diatonic harmony (part-writing and analysis).

63. *Aural Theory.* II. 2 hr. PR: Music 61. Continuation of Music 61.

64. *Written Theory.* II. 2 hr. PR: Music 62. Continuation of Music 62. Diatonic harmony including part-writing, harmonization of melodies, and harmonic analysis with triads, seventh chords, secondary dominants, and modulation. Analysis of binary and ternary forms.

65. *Aural Theory.* I. 2 hr. PR: Music 63. Continuation of Music 63.

66. *Written Theory.* I. 2 hr. PR: Music 64. Continuation of Music 64. Diatonic and chromatic harmony including part-writing, harmonization of melodies, and harmonic analysis with seventh chords, modulations, and foreign chords. Introduction to counterpoint.

67. *Aural Theory.* II. 2 hr. PR: Music 65. Continuation of Music 65.

68. *Analysis of Music.* II. 2 hr. PR: Music 66. Consideration of melody, rhythm, harmony, texture, form, etc., and how they function to produce an organic work of art. Analysis of larger musical forms and emphasis on twentieth century techniques.

100. *Band.* I, II. 0-2 hr. (May be repeated for credit.) Wind Ensemble, Symphonic Band, Concert Band, Marching Band, Varsity Band.

101. *Glee Club.* I, II. 0-1 hr. (May be repeated for credit.) PR: Consent. Open to all students by audition. Practical experience in rehearsal and public performance of choral music for men's and women's voices. (Will not be used to fulfill ensemble requirements for music majors.)

102. *University Choral Union.* I, II. 0-1 hr. (May be repeated for credit.)

103. *Orchestra.* I, II. 0-2 hr. (May be repeated for credit.) University-Community Symphony Orchestra, Opera Orchestra, Musical Theatre Orchestra.

105. *University Choir.* I, II. 0-2 hr. (May be repeated for credit.)

110. *Applied Music.* I, II. 1-4 hr. (May be repeated for credit.) Open to qualified students in any field. An audition for placement may be required. Credit as follows:

1. For music majors, 2 or 4 hr. credit for each 60-minute weekly lesson; the credit varies with expectations for practice according to the curriculum.
2. For others, a maximum of one 30-minute lesson per week for 2 hr. credit.
3. Students in lower grade levels of Applied Music may be grouped in small classes for initial instruction. 1-2 hr. credit.

113. *Diction for Singers.* I, II. 2 hr. (May be repeated for credit; max. 8 hr.) PR: Consent. Phonetics, phonetic symbols, and pronunciation in singing in alternating semesters in English; Italian, Latin, Spanish; German; and French. Other aspects of language that will aid in comprehension of song, oratorio, and operatic texts considered.

115. *Chamber Music.* I, II. 0-1 hr. (May be repeated for credit.) PR: Consent. Opportunity to perform in small ensembles, including Jazz, Percussion, Woodwind, Brass, Trombone, String, Piano, and New Music.

118. *Methods and Pedagogy.* I. 1-2 hr. PR: Music 110; Junior standing.

119. Methods and Pedagogy. II. 1-2 hr. PR: Music 118.

129. *Folk Music of the United States.* I. (Alternate Years.) 3 hr. Introduction to the folk music of various American cultural groups in historical context. Comparative analysis of representative tunes and texts.

130. *Music in Appalachia.* I. (Alternate Years.) 3 hr. (Not open to music majors.) Survey of traditional instrumental and vocal music of southern Appalachia. History, style characteristics, and performance techniques involving live and recorded examples emphasizing those found in West Virginia.

135. *Music in Western Culture.* I. 3 hr. PR: Music 30 or consent. (Not open to music majors.) A survey of western music from early Christian times to the twentieth century with special emphasis upon cultural and social relationships.

136. *Music of the Modern Age.* II. 3 hr. PR: Music 30 or consent. (Not open to music majors.) A survey of western music of the twentieth century from Debussy to recent years, emphasizing stylistic, historical, and cultural facets.

137. *Great Composers.* I. 3 hr. PR: Music 30 or consent. (Not open to music majors.) A study of major works by a chosen composer or group of composers.

138. *Introduction to History of Jazz.* II. 3 hr. PR: Music 30 or consent. An introduction to jazz, its characteristics, important performers, and their music, including an historical survey with attention to the changing style of the music.

151. *Instrumental Methods and Materials.* 3 hr. PR: Music 51, Music 44 and Music 45. Methods, materials, and administration of K-12 instrumental music programs; sequential instruction; conceptual and skill development; aural and reading competencies in music. Bi-weekly laboratory.

152. *Choral Music Methods and Materials.* 3 hr. PR: Music 51 and Music 49 or equivalent. Methods, materials, and administration of choral music programs; sequential instruction; conceptual and skill development; teaching aural and reading competencies in choral music. Bi-weekly laboratory.

153. *General Music Methods and Materials.* 3 hr. PR: Music 51; and Music 43, equivalent, or consent. Introduction to major pedagogical approaches used in K-12 general music classrooms; examination and development of materials and curricula; analysis of teaching and learning styles. Bi-weekly lab. 3 hr. lec.

160. *Composition.* I, II. 2 hr. PR: Music 68 or consent. (May be repeated for credit; max. 8 hr.) Creative writing.

171. *Instrumentation.* I. 2 hr. PR: Music 64. Study of characteristics of band and orchestral instruments and their use in scoring.

172. *Orchestration and Band Arranging.* II. 2 hr. PR: Music 171. Problems in scoring for orchestra and band.

173. *Jazz Harmony.* II. 2 hr. PR: Music 68 or consent. Introduction to jazz theory and harmony. Jazz nomenclature. Basic skills in ear training, chord voicing and substitution, and melody writing.

200. *Directed Music Studies.* I, II, S. 1-4 hr. (May be repeated for credit.) PR: Consent. Studies in performance, music education, music theory, music history, composition; includes directed or independent study in special topics.

210. *Piano Class Methods and Materials.* I. 3 hr. Methods, materials, and pedagogical techniques, including presentation of keyboard theory as used in functional piano. Practical organization of piano classes. Laboratory: Observation of experienced class teacher and student teaching.

212. *History of Keyboard Pedagogy and Technique.* II. 3 hr. Study of keyboard development and technique, including pedagogical works of the eighteenth through twentieth centuries and application to specific teaching problems. Laboratory: Student teaching and observation, emphasizing analysis and solution of technical problems.

213. *Introduction to Jazz Improvisation.* I. 2 hr. PR: Music 63, 64 and Proficiency Level 4. Development of improvisatory skills in the jazz idiom using melodic, harmonic, and

rhythmic motives and patterns, and the application of knowledge of tonal centers, chord progressions, and junctions.

214. *Advanced Jazz Improvisation.* II. 2 hr. PR: Music 213 or consent. Continuation of Music 213. Analysis of chord progressions with emphasis on chord substitutions, turnbacks, and scales. Development of jazz repertoire through performance.

218. *Repertoire.* I. 0-2 hr.

219. *Repertoire.* II. 0-2 hr.

221. *Music Before 1500.* I, II, or S. 3 hr. PR: Music 33-34 or consent. A study of sacred and secular monophony, Notre Dame organa, thirteenth-century motet and conductus, and fourteenth and fifteenth-century polyphony in France and Italy.

222. *Music of the Sixteenth and Seventeenth Centuries.* I, II, or S. 3 hr. PR: Music 33-34 or consent. A study of styles and forms from the High Renaissance to the late Baroque.

223. *Music of the Eighteenth Century.* I, II, or S. 3 hr. PR: Music 33-34 or consent. A study of styles and forms of the Late Baroque through the Classic period.

224. *Music of the Nineteenth Century.* I, II, or S. 3 hr. PR: Music 33-34 or consent. A study of styles, forms, and theoretical concepts illustrative of nineteenth-century music.

225. *Music of the Twentieth Century.* I, II, or S. 3 hr. PR: Music 33-34 or consent. A study of stylistic trends during the twentieth century.

226. *History of Jazz.* 3 hr. PR: Music 33-34. History and repertory of jazz from its Afro-American origins to 1975 with attention to its major exponents (including Joplin, Armstrong, B. Smith, Morton, Ellington, Gillespie, Parker, Davis, and Coltrane) and its evolving style.

230. *Music of Africa.* 3 hr. Traditional music of selected areas of Africa south of the Sahara with particular reference to East Africa. The diverse musical cultures with emphasis on historical background, instruments, ensembles, forms, styles, and music in its social context.

239. *Collegium Musicum.* I, II. 1-2 hr. (May be repeated for credit.) PR: Consent. Study of outstanding musical works not in the standard repertory. Performance of vocal and instrumental music, investigation of performance practices, preparation of editions, and direction of rehearsals under supervision.

240. *Clinic Chorus, Band, and Orchestra.* I, II. 1 hr. Experience in selection, preparation, and class performance of music appropriate for high school choral and instrumental groups.

243. *Music Workshops.* I, II, S. 1-2 hr. (May be repeated for credit.)

248. *Music Arranging for Public School Groups.* I, II. 2 hr. PR: Music 66. Practical experience in techniques of making simple, workable arrangements of music for public school choral and instrumental performance groups.

260. *Upper-Division Composition.* I, II. 2 hr. (May be repeated for credit.) PR: Two semesters Music 160, or consent based on scores submitted. Creative writing with emphasis on practical composition for performance.

263. *Counterpoint.* I. 2 hr. PR: Music 68 or consent. Sixteenth century counterpoint.

264. *Counterpoint.* II. 2 hr. PR: Music 68 or consent. Eighteenth century counterpoint.

265. *Analysis of Musical Form.* II. 3 hr. PR: Music 68 or consent. Detailed study of the structure of music.

266. *Major Project in Theory, Composition, or Music History.* I, II. 2 hr. (Not available for Graduate credit.) PR: Music 68.

267. *Electronic Music.* I. 2 hr. PR: Music 68 and consent. Technology of producing electronic music. Methods of producing electronic compositions, relationship between sound signal and sound perceived, ear training, analysis of examples from electronic music literature, and composition of electronic music.

268. *Electronic Music.* II. 2 hr. PR: Music 267. Continuation of Music 267.

273. *Arranging for Small Jazz Ensemble.* 2 hr. PR: Music 171, and Music 173 emphasis on small ensembles comprising three to nine players.

274. *Arranging for Large Jazz Ensemble.* 2 hr. PR: Music 273 or consent. Continuation of Music 273, with emphasis on arranging for big band and studio jazz ensemble.

299. *Recital.* I, II. 0-2 hr. (Not available for Graduate credit.) To be used to fulfill the applied major graduation requirement only when the student has achieved Proficiency Level 9. Students who have reached Level 6 may receive 1 hour credit, which may not be used to fulfill the graduation recital requirement.

News-Editorial (N-E)

108. *The Community Newspaper.* I. 2 hr. (Open to all University students.) Fundamental problems and techniques in operation of community newspapers.

118. *Advanced Reporting and Editing.* I. 3 hr. PR: Journ. 18 and 19. Development of a student's ability to cover and write spot news, public affairs and interpretative articles, and investigative stories. Laboratory work includes doing assignment sheets, editing stories and editing and makeup for the School's laboratory newspaper, <Take One.>

128. *Reporting Public Affairs.* II. 3 hr. PR: Admission to School and Journ. 18, 19 and NE 118. Reporting local, state, and federal governmental activities and other public affairs; Visits to public agencies; spot news and depth reporting.

220. *Writing for Magazines.* I, II. 3 hr. PR: Journ. 15, 18 or consent. Professional approach; magazine analysis, query letters, writing, rewriting; submitting manuscripts for publication.

225. *High School Publications Advising.* II. 3 hr. PR: Journ. 18, 19, and Adv. 113. (For students seeking Journalism certification.) Emphasizes writing styles, newspaper/ yearbook layout, rights and responsibilities of the teacher, students, and school system. Enrollees will construct instructional portfolios based on research and classroom discussion concepts. (Offered alternate years.)

227. *History of Journalism.* I. 3 hr. PR:Journ. 1 and Hist. 52 and 53, or consent. Development of media from seventeenth-century England and the American colonies; great names in journalism; freedom of the press and its mplications for and impact on the nation.

228. *Law of the News Media.* II. 3 hr. (For Journalism seniors and graduate students.) PR: Journ. 18, BN 117, Adv. 113, or PR 111. The law as it affects the mass media. Considered are such areas as libel, privacy, public records, criminal pre-trial publicity, freedom of information, obscenity.

230. *Editorial and Critical Writing.* I. 3 hr. PR: Admission to the School, Journ. 18 and 19. The student will analyze and write commentaries; study typical editorial pages and the ethics governing editorial page content; become familiar with libel, privacy, contempt, and other problems—operating and political—as they arise.

Orientation (Orien)

1. *Orientation to University Life.* I, II. 1 hr. Open only to new students in their first semester at the University. Study of the values, orientation, and emphasis which characterize higher education and an explanation of the nature of a university and its role. (Pass-Fail grading only.)

2. *Orientation to Majors and Professions.*1 hr. Introduces students to requirements of specific academic majors and professions. Topics also include career opportunities, internships, study abroad, fellowships, and graduate study opportunities. (Pass-Fail grading only.)

51. *Career Series—Career Planning Exploration.* I, II. 1 hr. Exploration of careers with special emphasis on individual interests, abilities, and values. Most beneficial to freshmen and sophomores, but appropriate for juniors and seniors. (Pass-Fail grading only.)

52. *Career Series—Job Search.* I, II. 1 hr. PR: Orien. 51 recommended. Methods of looking for a job—employer expectations, interviewing, resumes, letter writing, etc. Should be taken next to last semester, but can be taken at other times. (Pass-Fail grading only.)

60. *Introduction to Health Careers.* II. 1 hr. A study of careers in the health professions. Readings, lectures, and discussions by professionals in many health fields will include the educational requirements for and functions of their respective health professions. (Pass-Fail grading only.)

120. *Leadership Development.* I. 2 hr. PR: Sophomore standing. Primarily for sophomores and juniors. A practical survey of leadership techniques taught by various instructors. Major emphasis placed upon improvement of leadership abilities within the WVU campus structure and problems particular to student organizations. (Pass-Fail grading only.)

150. *Orientation to Law.* I, II. 1 hr. An orientation to the legal profession for undergraduates. Undergraduate preparation for law school; Law School Admissions Test (LSAT); admission to law school, law school experience, and the legal profession. (Pass-Fail grading only.)

191. *Orientation Practicum.* I, II. 1 hr. PR: Sophomore or higher standing and consent. Students will participate in Orien. 1 as assistants to faculty teaching Orien. 1. Practicum form of study leading to an understanding of the values, orientations, and emphases which characterize higher education. (Pass-Fail grading only.)

Petroleum and Natural Gas Engineering (PetE)

100. *Introduction to Petroleum Engineering.* II, S. 3 hr. PR: Sophomore standing. Introduction; origin, migration, and accumulation of petroleum; reservoir fluids properties; properties of reservoir rocks; exploration; drilling technology; reservoir engineering; well completions; production engineering; surface facilities; transportation. Open to all students.

205. *Transport Phenomena in Petroleum Engineering.* II 3 hr. PR: M.A.E. 41. Introduction to fluid flow in pipes, two-phase flow, rotary drilling hydraulics, primary cementing jobs, flow calculations, flow measuring devices, fluid machinery, dimensional analysis, and heat transfer.

210. *Drilling Engineering.* II. 4 hr. PR or Conc.: Geol. 1, M.A.E. 114. Rock properties, functions and design considerations of rotating system, hoisting system, and circulation system; drilling fluids calculations and selections; hydraulic programs; drilling optimization; casing and casing string design; cementing programs; and pressure control.

211. *Production Engineering.* I. 3 hr. PR: Pet.E. 210. Well completion, performance of productive formulation, drill stem tests, completion of wells, flowing wells, gas lift methods and equipment, pumping installation design, well stimulation, emulsion, treating, gathering and storage of oil and gas, field automation. 3 hr. lec.

212. *Drilling Fluids Laboratory.* I, II. 1 hr. PR or Conc.: Pet.E. 210, M.A.E. 114. Topics include clay hydration, viscosity of water-based fluids, mud weight control, filtration studies, thinning agents, chemical contaminants, lime muds, polymer muds, rheological models, and liquid and solid determination.

224. *Petroleum Engineering Problems.* I, II, S.1-3 hr. PR: Senior standing. Investig ation of a special problem in petroleum engineering.

232. *Petroleum Properties and Phase Behavior.* I. 3 hr. PR or Conc.: Chem. 141 or consent. Theoretical and applied phase behavior of hydrocarbon systems and hydrocarbon fluid properties. Applications to petroleum reservoir and production engineering design. 2 hr. lec., 3 hr. lab.

233. *Elements of Petroleum Reservoir Engineering.* II. 3 hr. PR: Pet.E. 232 or consent. Basic properties of petroleum reservoir rocks. Fluid flow through porous materials. Evaluation of oil and gas reserves.

234. *Applied Petroleum Reservoir Engineering.* I. 3 hr. PR: Pet.E. 233 or consent. Application of reservoir engineering data to calculation of recovery potentials and to analysis, simulation and prediction of reservoir performance under a variety of production methods to effect maximum conservation.

235. *Formation Evaluation.* I, II. 3 hr. PR: Pet.E. 210 or consent. Various well logging methods and related calculations with exercises in interpretation of data from actual well logs. 3 hr. lec.

241. *Oil and Gas Property Evaluation.* I. 3 hr. PR: Pet.E. 233; PR or Conc.: Pet.E. 211 and 235; or consent. Reserve estimation, decline analysis, petroleum property evaluation including interest calculations, cost estimation and tax evaluation. Overview investment decision analysis and computer applications in property evaluation.

244. *Petroleum Reservoir Engineering Laboratory.* I, II. 1 hr. PR or Conc.: Pet.E. 233. Laboratory evaluation of basic and special petroleum reservoir rock properties. 3-hr. lab.

262. *Introduction to Reservoir Simulation.* II. 3 hr. PR: M. 281, Pet.E. 234 or consent. Partial differential equations for fluid flow in porous media and the use of finite-difference equations in solving reservoir flow problems for various boundary conditions. Study of individual well pressures and fundamentals of history matching.

270. *Natural Gas Engineering.* I. 4 hr. PR: Pet.E. 205 or M.A.E. 114; Pet.E. 233; and M.A.E. 101; or consent. Natural gas properties, compression, transmission, processing, and application of reservoir engineering principles to predict the performance and design of gas, gas-condensate, and storage reservoirs. Includes a laboratory devoted to gas measurements. 3 hr. lec., 3 hr. lab.

271. *Natural Gas Production and Storage.* II. 3 hr. PR: Pet.E. 270. Development of gas and gas-condensate reservoirs; design and development of gas storage fields in depleted gas, gas-condensate, oil reservoirs and aquifers; design of natural gas production and processing equipment.

295. *Petroleum Engineering Design.* II. 3 hr. PR: Pet.E. 211, 234, 241; or consent. Comprehensive problems in design involving systems in oil and gas production, field processing, transportation, and storage.

299. *Well Stimulation Design.* II. 3 hr. PR: M.A.E. 43, Pet.E. 210, 211, 233, and 235; or consent. Fundamentals of well stimulation and treatment design and their applications to low permeability formations.

Philosophy (Phil)

1. *Introduction to Critical Reasoning.* I, II, S. 3 hr. An elementary study of critical thinking and reasoning. For students who want to improve their skills in recognizing fallacious patterns of reasoning, constructing acceptable arguments, and criticizing faulty lines of reasoning.

2. *Historical Introduction to Philosophy.* I, II, S. 3 hr. An introductory survey of the major philosophers and philosophical movements from ancient times to the present.

3. *Introduction to Problems of Philosophy.* I, II, S. 3 hr. An elementary examination of such philosophical problems as the mind-body problem, the existence of God, freedom and determinism, and the nature of persons and their knowledge.

10. *Introduction to Symbolic Logic.* I, II, S. 3 hr. An introduction to modern symbolic logic (basically, propositional logic and the predicate calculus) for students who want to acquire the skill to represent symbolically the form of deductive arguments and to test formally for validity.

11. *Symbolic Logic 2.* I, II. 3 hr. PR: Phil. 10. Continuation of Phil. 10, covering relational logic and identity. Additional topics may include alternative methods and systems of logic such as proof trees, axiom systems, alternative operators, modal and many-valued logics, and set theory. (Equiv. to Math. 11.)

13. *Current Moral Problems.* I, II, S. 3 hr. An examination of current moral problems. Topics include some of the following: abortion, euthanasia, sexism and sexual equality, preferential treatment, animal rights, sexual morality, pornography, economic justice, paternalism, punishment, and nuclear deterrence.

15. *Introduction to Aesthetics.* I or II. 3 hr. An elementary examination of philosophical problems associated with the nature of beauty, the nature of the arts, and the justification of aesthetic evaluation. (Not offered every year.)

17. *Philosophy of Games.* I, II, S. 3 hr. Definition of "game"; value of games; games as art, science, profession, symbol, education tool, etc. Game theory: its applications and conceptual periphery. Social aspects of play and leisure.

20. *History of Ancient Philosophy.* I. 3 hr. An introduction to the philosophies of the pre-Socratics, Plato, Aristotle, the Epicureans, and the Stoics.

23. *Philosophy of Fundamentalism.* 3 hr. Christian fundamentalism as philosophy; analysis of traditional doctrines for rational defense of inerrantist interpretation.

91. *Special Topics.* I or II, S. 3 hr.

103. *Topics in Medieval Philosophy.* I or II. 3 hr. PR: 3 hr. of philosophy or consent. Introduction to the philosophies of St. Augustine, St. Thomas Aquinas, Peter Abelard, William of Occam, and other selected figures from the Medieval period. (Not offered every year.)

104. *History of Ethics.* I or II. 3 hr. PR: 3 hr. of philosophy or consent. An examination of such issues as the nature of the good life, the just society, and our moral responsibilities. Such major philosophers as Plato, Aristotle, Aquinas, Kant, and Mill will be studied. 3 hr. lec. (Not offered every year.)

105. *20th Century Analytic Philosophy.* I or II. 3 hr. PR: 3 hr of philosophy or consent. A critical study of twentieth-century Western analytical philosophy (for example, Russell, Logical Positivism, Wittgenstein).

106. *Mathematical Logic 1.* I or II. 3 hr. PR: Phil. 10 or consent. Axiomatic method, "naive" and axiomatic set theory, Russell's Paradox, infinity and uncountability, "reduction" of mathematics to set theory, introduction to consistency and completeness of logic, Godel's proof of the incompleteness of arithmetic. (Equiv. to Math. 161.)

108. *Ethical Theory.* 3 hr. PR: 3 hr. of philosophy or consent. Topics to be selected from the following: an examination of major ethical theories, justification in ethics, moral truth, ethical skepticism, moral rights and duties, and the meaning of ethical concepts.

111. *American Philosophy.* I or II. 3 hr. PR: 3 hr. philosophy or history or English major or consent. A study of the ideas and movements in American philosophical thought from Colonial times to the early twentieth century, including such topics as the American enlightenment, transcendentalism, social Darwinism, idealism, and pragmatism. (Not offered every year.)

113. *Russian Philosophy.* I or II. 3 hr. PR: 3 hr. philosophy or Russian language option or international studies interdepartmental major or consent. A critical, historical study of Russian and Soviet philosophy from the eighteenth century to the present. (Not offered every year.)

120. *History of Modern Philosophy.* II. 3 hr. PR: 3 hr. of philosophy or consent. A study of selected writings by major philosophers of the Western world from Descartes to Kant.

121. *Existentialism.* I or II. 3 hr. PR: 3 hr. philosophy or literature course in existentialism or consent. Survey of the major existentialist thinkers. (Not offered every year.)

122. *Philosophies of Asia.* I or II. 3 hr. PR: 3 hr. philosophy or consent. A critical, historical examination of the writing of the classic philosophers of India and China. (Not offered every year.)

123. *Philosophy of Religion.* I or II. 3 hr. PR: 3 hr. of philosophy or religious studies interdepartmental major or consent. Examines questions of belief in God's existence, life after death, the problem of evil, determinism and divine foreknowledge, or other topics bearing upon the nature of a religious orientation to life. (Not offered every year.)

125. *Philosophy and the Black Experience.* I, II. 3 hr. PR: Sophomore standing or consent. Philosophical examination of the American Black experience and the moral and political rights and obligations of Blacks in the United States. (Not offered every year.)

150. *Social and Political Philosophy.* I or II. 3 hr. PR: 3 hr. of philosophy or political science major or consent. An examination of the relationships among the individual, society and the state. Possible topics include justifications of the state, justice, rights, liberty, equality, and arguments for socialism and capitalism.

158. *Philosophy of Science.* I or II. 3 hr. PR: 3 hr. philosophy or science major or consent. Philosophical problems associated with the concepts and methodology of science.

159. *Philosophy of the Social Sciences.* I or II. 3 hr. PR: 3 hr. philosophy or major in one of the social sciences or consent. Philosophical problems associated with the concepts and methodology of the social sciences. (Not offered every year.)

166. *Metaphysics.* I or II. 3 hr. PR: 3 hr. of philosophy or consent. Traditional problems associated with reality and experience, universals and particulars, causality, space and time, matter and mind, and the nature of the self. (Not offered every year.)

171. *Theory of Knowledge.* 3 hr. PR: 3 hr. of Phil. or consent. The nature and scope of human knowledge. Topics may include perception, belief, truth, evidence, certainty, and skepticism.

172. *Philosophy of Law.* I or II. 3 hr. PR: 3 hr. philosophy or pre-law student or consent. An introduction to the philosophical study of law; topics to be selected from: theories of the nature of law, legal obligation, responsibility, punishment, free speech, paternalism, legal moralism, and legal ethics.

187. *Philosophy of Mind.* I or II. 3 hr. PR: 3 hr of philosophy, psychology major, or consent. Topics to be selected from: the mind-body problem, psychological explanation, psychology and the neurosciences, personal identity, consciousness, artificial intelligence, mental representation, emotions, intentionality, folk psychology, and other minds.

190. *Teaching Practicum.* I, II. 3 hr.

191. *Special Topics.* I or II. 3 hr.

253. *Philosophy of Mathematics.* I or II. 3 hr. PR: Phil. 106 or consent. Contemporary viewpoints in the foundations of mathematics. (Not offered every year.)

283. *Philosophy of History.* I or II. 3 hr. PR: 6 hr. in philosophy or history major or consent. Theoretical problems such as the nature of historical explanation, relativism, and the status of speculative principles of history. (Not offered every year.)

285. *Philosophy of Language.* I or II. 3 hr. PR: 6 hr. in philosophy or linguistic or language major or consent. Philosophical problems concerning the nature of meaning and language.

290. *Directed Studies.* I, II, S. 1-6 hr. (May be repeated for credit.)
PR: Instructor's written consent. Individually supervised reading, research, and projects.

292. *Advanced Topics in Philosophy.* I or II. 3 hr. PR: 6 hr. in philosophy or consent. Advanced philosophical investigation of selected problems and issues. Topics will vary.

294. *Medical Ethics.* I or II. 3 hr. PR: Junior standing or consent. Ethical issues in health care practice, research, and policy. Topics include the professional-patient (client) relationship, foregoing life-sustaining treatment, euthanasia, abortion, reproductive technology, and the distribution of scarse and/or costly medical resources.

Physical Therapy (Ph Th)

110. *Functional Anatomy.* II. 3 hr. The musculoskeletal system including biomechanics, principles of movement, and analysis of muscle and joint action. Normal and pathological gait.

111. *Physical Therapy Principles and Physical Agents.* I. 4 hr. Lecture- laboratory introduction to physical therapy and orientation to patients. Safety procedures, gait training, and nursing procedures related to physical therapy. Theory and application of hydrotherapy, thermotherapy, cryotherapy, actinotherapy, massage, and ultrasound are presented.

112. *Cardiopulmonary Physical Therapy.* II. 3 hr. Correlation of anatomy, physiology, and pathology for treatment of cardiopulmonary conditions. Laboratory in cardiopulmonary evaluation, cardiac and pulmonary rehabilitation procedures, and respiratory treatment techniques. Lectures and case presentations in appropriate medical and surgical conditions.

114. *Medicine and Neurology.* II. 3 hr. Lectures in medicine including dermatology, aging, neurology, pharmacology and vascular disorders.

116. *Clinical Education 1.* II. 1 hr. Students perform basic treatment procedures under the supervision of experienced therapists in various clinics. (Graded Pass-Fail only.)

117. *Seminar.* I. 1 hr. Investigation of selected problems and issues.

118. *Basic Therapeutic Exercise.* II. 3 hr. Theory and clinical application of evaluation techniques including goniometry and manual muscle testing. The physiological basis and therapeutic application of passive and active forms of exercise are also studied. Emphasis is on progressive resistive and flexibility exercises.

120. *Human Development.* I. 3 hr. Presents human development across the life span with a special emphasis on neuromotor development. Topics include genetics, embryology, infancy, childhood, adolescence, adulthood, aging, and death.

270. *Organization and Management.* II. 4 hr. Basic principles and philosophy of management and the organization with emphasis on interpersonal relationship within an organization, styles of tasks, conflict management, verbal and nonverbal communications, decision analysis and fiscal management.

271. *Electrotherapy and Electromyography.* I. 4 hr. Orientation to theory and application of electrical currents. Laboratory experience in electrical diagnosis and treatment procedures (including high and low volt stimulation, nerve conduction studies, and the use of electrical stimulation for pain control) is provided.

272. *Professional and Community Relationships.* II. 2 hr. Community health organization, including local, state, and national facets such as Medicare- Medicade and welfare. Planning based on chronic disease epidemiology. Role of physical therapist and other allied health personnel in providing comprehensive health care for chronically ill and geriatric population. Students become involved in care of the home-bound.

273. *Physical Evaluation.* I. 4 hr. Lectures, laboratory practice, and case study presentations are utilized to study the principles and techniques for examining the treatment disorders of the neuromusculoskeletal systems. An indepth study of extremity joint mobilization techniques is also provided.

274. *Orthopedic Physical Therapy.* II. 3 hr. Continuation of Ph. Th. 273 format and is a continuation of that course. Evaluation and rehabilitation of mechanical disorders of the spine are emphasized together with physical therapy and orthopedic management of selected pediatric disorders.

275. *Professional Literature and Research.* I. 3 hr. Current literature method writing, statistics, and introduction to research methodology. A senior project is required.

276. *Elective Study.* II. 3 hr. Highly skilled techniques used in physical therapy are many and varied. It is beyond the scope of any baccalaureate program to offer such skill to every student in all areas. Therapists are beginning to specialize in certain areas. The student chooses a particular area and develops it to the student's fullest capabilities in the allotted time.

277. *Clinical Teaching.* I. 2 hr. Emphasis on the physical therapist fulfilling numerous teaching roles. Students develop skill and techniques in the facilitation of learning,

objective writing, presenting information, A-V utilization, and development of evaluation tools for both clinical and didactic settings.

278. *Correlative Rehabilitation.* II. 5 hr. Lecture, case presentations, and laboratory practice concerning the pathology, evaluation, and treatment in the areas of spinal cord injuries, amputations, and burns. Underlying philosophy and principles of comprehensive care of the handicapped. Prosthetics, orthotics, bowel and bladder training, assistive and supportive devices, and wheelchair evaluations.

279. *Advanced Therapeutic Exercise.* I. 4 hr. Correlation of the basic principles acquired from study of gross anatomy, neuroanatomy, pathology, physiology, and fundamental anatomy with the scientific application of bodily movement. In-depth study of types and desired effects of exercise methods and techniques primarily concerned with neuromuscular re-education. Laboratory practice consists of application of specific neurophysiological techniques to patients presented with various neuromuscular problems.

281. *Clinical Education 2.* I. 1 hr. Continuation of Ph. Th. 116. The student's participation in treatment programs is increased and enlarged to include basic testing and evaluation procedures. (Graded Pass-Fail only.)

282. *Clinical Education 3.* II. 1 hr. Supervised experience in more specialized procedures and testing techniques and patient program design. (Graded Pass-Fail only.)

290. *Clinical Education 4.* S. 1-12 hr. Three full-time summer affiliations of six to eight weeks each in a variety of extramural facilities, such as a general hospital, children's facilities, rehabilitation services, and public health. (Graded Pass-Fail only.)

Physics (Phys.)

1. *Introductory Physics.* I, II, S. 4 hr. PR: Trigonometry and college algebra. The fundamental philosophy and principles of physics are applied to studies of mechanics, sound, heat, and thermodynamics through demonstrations, problems, and experiments.

2. *Introductory Physics.* I, II, S. 4 hr. PR: Phys. 1. The fundamental philosophy and principles of physics are applied to studies of electricity, magnetism, optics, light, and atomic and nuclear physics through demonstrations, problems, and experiments.

7. *Physics of Music.* I. 3 hr. For all students including those in the liberal and fine arts. (No science or music prerequisites.) The physical and psychophysical principles underlying the nature, production, transmission, reception, and reproduction of sound.

8. *Light, Vision and Color.* II. 3 hr. For all students including those in liberal and fine arts. Descriptive course emphasizing the basic principles of light with applications to color vision and optical phenomena in everyday environment and technology.

11. *General Physics.* I, II, S. 4 hr. PR: A grade of C or better in Math. 15. (Not open to students who have credit for Phys. 1.) Survey of classical mechanics, thermodynamics and waves.

12. *General Physics.* I, II, S. 4 hr. PR: Phys. 11. (Not open to students who have credit for Phys. 2.) Survey of electricity, magnetism, and optics.

124. *Introductory Modern Physics.* II. 4 hr. PR: Phys. 12, Math. 16. Topics of modern physics of interest to science majors and engineers; atomic and molecular structure and spectra, solid state and nuclear physics, relativity, and elementary particles.

191. *Special Topics.* I, II, S. 1-3 hr. Study of of topics of current interest in physics.

201. *Special Topics.* I, II. 1-6 hr. per sem. (May be repeated to max. of 24 hours.) Study of topics of current interest in physics.

213. *Introductory Electronics.* 3 hr. PR: Phys. 11, 12. Principles and applications of integrated circuits and digital electronics. 2 hr. lec., 1 hr. lab.

221. *Optics.* 3 hr. PR: Phys. 11, 12, Math. 18. A basic course in physical optics covering wave mathematics, propagation, polarization, interference, and diffraction; applications in geometrical optics and selected topics in scattering and quantum optics. 3 hr. lec.

225. *Atomic Physics.* I, II. 3 hr. PR: Phys. 124 or equiv. Relativistic mechanics, atomic structure, and spectra.

231, 232. *Theoretical Mechanics.* I, II. 3 hr. per sem. PR: Phys. 11, 12 or equiv.; Conc.: Math. 18. Scalar, vector, and tensor fields; curvilinear coordinate systems. Kinematics and dynamics of particles, systems of particles and rigid bodies. Lagrangian and Hamiltonian formulation. Relativistic motion.

233, 234. *Electricity and Magnetism.* 3 hr. PR: Phys. 11, 12, or equiv., Conc: Math. 18. Electrostatics, electrostatics in matter, magnetostatics, magnetostatics in matter, Maxwell's equations, reflection and refraction, wave guides and cavities.

241. *Advanced Physics Laboratory.* I, II. 1-2 hr. per sem. PR: Phys. 11, 12, 124. Experiments in physics designed to implement theory courses, give experience in data taking and instrumentation, and learn methods of data evaluation and error analysis.

248. *Physics Seminar.* I, II. (No Credit.) (Suggested for junior, senior, and graduate Physics majors.) These lectures acquaint students with topics of current interest in physics.

251. *Introductory Quantum Mechanics.* I. 3 hr. PR: Phys. 124, Math. 18. Fundamental principles of quantum mechanics; state functions in position and momentum space, operators, Schrodinger's equation, applications to one- dimensional problems, approximation methods, the hydrogen atom, angular momentum and spin.

263. *Nuclear Physics.* I, II. 3 hr. PR: Phys. 124; Math. 17. Study of characteristic properties of nuclei and their structure as inferred from nuclear decays and reactions, leading to a knowledge of nuclear forces and models.

271. *Solid State Physics.* I, II. 3 hr. PR: Phys. 124 or equiv.; Math. 17. Properties of crystalline solids; includes crystal structure, interatomic binding, lattice vibrations, electron theory of metals, and the band theory of solids with some applications.

281. *Plasma Physics.* 3 hr. PR: Phys. 11, 12, Conc.: Phys. 234. Introductory course in the physics of ionized gases; particle and fluid treatment of plasmas, waves, equilibrium and stability, kinetic theory, and nonlinear effects. 3 hr. lec.

283. *Thermodynamics and Statistical Mechanics.* II. 3 hr. PR: Phys. 124 or equiv., Math. 17. Introduction to the statistical foundations of thermodynamics; applications of the fundamental laws of thermodynamics to physical and chemical systems.

Physical Science (P. Sci.)

1. *Introductory Physical Science.* I. 4 hr. (For Elementary Education majors only.) Emphasis on practicing reasoning abilities necessary to carry out simple scientific inquiry. Major concepts include properties of matter and astronomy. Majority of class time is spent in laboratory activities and solving problems using an activity-based approach.

2. *Introductory Physical Science.* II. 4 hr. PR: P. Sci. 1. Continuation of P. Sci. 1. Concepts include electricity, motion, heat and temperature, energy, and chemistry.

11. *General Physical Science 1.* 4 hr. (Strongly recommended for freshmen and sophomores only.) Basic principles of physics and astronomy and science laboratory skills which are applicable to living in a modern and technological society. Included: energy resources, radioactivity, satellites, rockets, the solar system, and the origin of the universe.

12. *General Physical Science 2.* 4 hr. (Strongly recommended for freshmen and sophomores only.) Basic principles of chemistry, geology and meteorology and laboratory skills which are applicable to living in a modern technological society. Included: pharmaceuticals, household products, pollution, weather, earth minerals, earthquakes.

190. *Teaching Practicum in Physical Science.* I, II. 1-3 hr. per sem. PR: P. Sci. 1 and 2 and consent. Opportunity to help teach an activity-based science course under the direction of experienced instructors. Emphasis on developing inquiry teaching skills useful for all levels of classroom instruction.

Plant Pathology (P. Pth.)

153. *Forest Pathology.* I. 3 hr. PR: Biol. 2 and 4, F. Man. 211. Important diseases of forest and shade trees. Causes and methods of control.

201. *General Plant Pathology.* I. 4 hr. Nature and causes of plant diseases; methods of control.

Plant Science (Pl. Sc.)

52. *Principles of Plant Science.* I, II. 4 hr. PR: Biol. 1 and 3. Basics of the nature, history, classification, role, distinction, structure and function, reproduction, improvement, culture, pests, storage and handling, production and marketing, and utilization of agricultural plants.

180. *Assigned Topics.* I, II, S. 1-4 hr. (Students eligible for this course must be in good standing and have prior division approval of the proposed outline.) Special studies in agronomy (crops and soils), bacteriology, horticulture, or plant pathology.

195. *Seminar.* II. 1 hr. Discussion of current problems in agriculture and agricultural environmental protection. (Pass/Fail grading.)

Polish (Polsh.)

1. *Elementary Polish.* I. 3 hr.
2. *Elementary Polish.* II. 3 hr. PR: Polsh. 1. Continuation of Polish 1.

Political Science (Pol. S.)

1. *Introduction to Political Science.* I, II, S. 3 hr. Introduction to government. Origins, forms, and functions of the state; organization and forms of government; and the relationships of groups and individuals to the state.

2. *The American Federal System.* I, II. 3 hr. General survey of American national government and politics.

3. *Global Political Issues: An Introduction.* I, II, S. 3 hr. Analyzes significant issues in world politics, e.g., environment, energy, food, population, arms and security, human rights, economic interdependence, and development. Examines the values and policies in conflict, and alternative futures.

7. *Modern Political Ideologies.* I, II. 3 hr. (Designed especially for nonmajors.) A survey of some of the major competing ideologies in the modern world, including capitalism, communism, socialism, fascism, and democracy.

100. *Empirical Political Analysis.* I, II, S. 3 hr. Designed to provide a basic understanding of how to read and conduct empirical political science research. Topics include research design, hypotheses testing, data collection, and statistical analysis. No prior knowledge of computers or statistics required.

110. *Law and the Legal System.* I. 3 hr. Introductory course on the role of law in political processes. Includes a survey of subfields in United States law and an examination of participants and processes in the United States legal system.

111. *Political Parties and Electoral Processes.* II. 3 hr. Nature of political parties. Public regulation of parties and electoral processes. A close examination of suffrage, nominating devices, campaign procedures, and the conduct of elections.

120. *State and Local Government.* I, II. 3 hr. The legal basis, structure, politics and operation of state and local governments, their relations with each other, and their place in the federal system.

130. *Introduction to Policy Analysis.* I, II, S. 3 hr. Examination of the causes and consequences of public policies. Substantive policies examined include: civil rights, housing and urban renewal, environment, health, welfare, law enforcement, education, and taxation.

137. *Women and Politics, Policy, and Law.* II. 3 hr. The public policy process as it relates to gender-related issues. Formation of women's interest groups; women's political participation and office-holding; national policies as formulated in executive orders, congressional legislation, and court cases; policy implementation and impact.

140. *Introduction to Public Administration.* I, II. 3 hr. The development, organization, procedures, processes, and human relation factors of governmental administration in American democracy.

150. *Introduction to Comparative Politics.* I, II. 3 hr. An introduction to the political and governmental systems of industrialized and Third World countries. Focuses on approaches to comparative political study, political cultures and participation, and government structures, processes, and policy performance.

160. *International Relations.* I, II. 3 hr. Contemporary world politics. Background to make present-day international affairs more understandable.

170. *History of Political Thought 1.* I. 3 hr. Major political philosophers and ideas from the Greeks to the 17th century.

171. *History of Political Thought 2.* II. 3 hr. Examination of the leading political philosophers and ideas of the 17th, 18th, and 19th centuries, including Hobbes, Locke, Montesquieu, Rousseau, Burke, Bentham, Mill, Hegel, and Marx.

188. *Honors Seminar.* I, II. 3 hr.

189. *Selected Topics (Honors.)* I, II. 3 hr.

191. *Special Topics.* I, II, S. 3 hr. Course topics change. Students may enroll more than once.

194. *Field Experience.* I, II, S. 1-18 hr. (Total credit applicable toward any Arts and Sciences degree may not exceed the maximum of 18 hours.) PR: Consent for those who wish to work with faculty and field supervisors to design field experience with planned learning objectives and credit goals.

196. *Seminar.* I, II, S. 1-6 hr.

200. *Quantitative Political Analysis.* I, II. 3 hr. PR: Upper-division standing. Course stresses the understanding of methods, theories, and substantive interests identified with behavioral approach to the study of politics. Descriptive statistics and the use of the University of Chicago's Statistical Package for the Social Sciences (SPSS) are included.

210. *The American Presidency.* I, II. 3 hr. Institutional, behavioral, and societal forces which have given rise to the modern presidency; factors which enhance and constrain the exercise of the presidential power over those constituencies with which the president must interact; the nature and consequences of the presidential decision-making process; desirability and/or feasibility of reforming the presidency.

212. *Judicial Politics.* II. 3 hr. The role of courts and judges in the American political process. Topics include the structure and process of courts, factors involved in judicial decision-making, and the appropriate role of courts in matters of public policy.

213. *American Constitutional Law.* I. 3 hr. The role of the Constitution in the American political system. Topics covered include the political concept of constitutionalism; the role of the Supreme Court in the political process; division of powers among the three branches of government; and the constitutional relation between the national government and the states.

214. *Civil Liberties in the U.S.* I, II. 3 hr. Issues in constitutional law concerning personal liberties against government action. Topics include free speech, press and association; religious freedoms; abortion; the right to privacy; due process of law; and criminal procedure safeguards.

218. *The Legislative Process.* II. 3 hr. Structure and organization of legislative bodies, powers of the legislature, detailed study of law-making procedures, influence of outside forces.

221. *West Virginia Government and Administration.* I, II. 3 hr. Organization and operation of the state government of West Virginia.

225. *Urban Politics.* I. 3 hr. Legal basis, structure, processes, and politics of urban governments and cooperative-conflict relations with other governmental units.

226. *Problems of State and Local Government.* I, II. 3 hr. PR: Pol. S. 120 or equiv. Selected problems in state and local systems in the context of American federalism.

231. *Criminal Law, Policy and Administration.* I, II. 3 hr. Legal and administrative approach to policy issues in crime and punishment. Focuses on the criminal law, court decisions, and implementation of law and policy in the criminal justice field.

232. *Public Opinion and Propaganda.* I, II. 3 hr. In-depth treatment of public opinion, election campaigns, and specific campaign techniques. Emphasis on the forces that shape public opinion; the role of campaign professionals; and the practical aspects of running a campaign.

235. *Civil Rights Policy and Politics.* II. 3 hr. Analysis of the law, politics, and policy related to discrimination in public accommodations, voting, education, housing and employment based on race, gender, national origin, handicapped status, and age.

236. *Energy Policy and Politics.* II. 3 hr. An examination of U.S. energy policies and politics, with particular emphasis placed on the development and implementation of energy policies since 1973.

238. *Politics of Environmental Policy.* I. 3 hr. Examines the formulation, implementation, and evaluation of United States environmental policy.

240. *Public Administration and Social Change.* I, II. 3 hr. PR: Pol. S. 140. The study of government and administrative organization in their technical, and environmental-in American society.

242. *American Administrative Systems.* I. 3 hr. Analysis of the nature and processes of American public administration (political, legal, economic, and social conditions), including the role of the bureaucracy in a democracy. (Equiv. to Pub. A. 242.)

244. *Administrative Law and Regulation.* II. 3 hr. PR: Pol. S. 140 or consent. Study of structure and politics of administrative process, focusing primarily on regulatory agencies. Covers law and administration, rulemaking, adjudication, judicial review, legislative oversight, discretion, access to administrative process, administrative responsibilities and liabilities, and deregulation.

246. *Comparative Public Administration.* II. 3 hr. Theory and practice of public administration in diverse cultures and national political systems.

250. *Government of Japan.* II. 3 hr. Survey of political institutions and governmental process of Japan with special emphasis on the analysis of political problems in the post-war period.

251. *Governments of Soviet Union and Eastern Europe.* II. 3 hr. PR: Junior- Senior standing or consent. Survey of the political nondemocratic governments of the Soviet Union and its Eastern European satellites, with special reference to the guiding role and development of Marxism-Leninism.

253. *Western Democratic Governments.* 3 hr. Examination of the government and politics of Canada, Great Britain, France, and Germany.

254. *Government of China.* I. 3 hr. Survey of political institutions and governmental process of the People's Republic of China with special emphasis on the analysis of political problems since 1949.

255. *Governments of Latin America.* I. 3 hr. Comparative study of the major nations of Latin America.

256. *Governments of the Middle East.* II. 3 hr. PR: Junior-Senior standing or consent. Governments and political forces of the Middle East.

258. *Politics of Africa.* II. 3 hr. Historical legacies and current political processes of tropical African countries.

261. *International Organization.* II. 3 hr. Agencies created since the close of World War II. Some reference to the development of international law and United Nations.

262. *Nuclear War.* I, II. 3 hr. PR: Pol. S. 160 or consent. A study of the current balance of terror and the potential threat of a nuclear war. This course addresses the sociopolitical and technological dimensions of this issue from 1945 to present.

263. *Public International Law.* I. 3 hr. Law governing relations among nations, including development of rules, means of enforcement, and conflicts between theory and practice.

264. *Conduct of American Foreign Relations.* I. 3 hr. PR: Junior-Senior standing or consent. Factors influencing the formation and execution of United States foreign relations; analysis of past policies and current issue areas in relations with major developed and developing nations and international organizations.

265. *Politics, Ethics and War.* II. 3 hr. PR: Pol. S. 160 or consent. An examination of the relationship between politics, ethics and war with special reference to nuclear weapons and strategies. Emphasis on the causes of the nuclear dilemma.

266. *Soviet Foreign Policy.* II. 3 hr. PR: Junior-Senior standing or consent. Factors influencing the formulation and execution of Soviet foreign relations; analysis of past policies and current issue areas in relations with major developed and developing nations and international organizations.

267. *Latin America in International Affairs.* II. 3 hr. Relations of Latin American states among themselves, with the United States, the United Nations, regional organizations, and nonwestern states. Analysis in depth of the Monroe Doctrine and its corollaries and the inter-American system.

268. *International Conflict.* 3 hr. PR: Pol. S. 160 or consent. Conflict in international relations, particularly armed conflict between nations. The role of force, impact of modern technology and nuclear weaponry, theoretical and research approaches to causes of conflict and modes of conflict resolution.

269. *Far Eastern International Relations.* II. 3 hr. International relations of Far Eastern countries with emphasis on historic roots of recent conflicts, the competitive role of the United States and the Soviet Union, confrontation between the communist and anti-communist countries in the region, and the regional cooperation and security problems in the post-war period.

272. *Recent and Contemporary Political Thought.* I. 3 hr. Examination of intergral liberalism and the forces leading to the decline of liberalism and a critical analysis of the fascist and communist ideologies with their threat to the traditions of western civilization embodied in Christianity and conservatism.

273. *American Political Theory.* I, II. 3 hr. Major American political ideas and their influence upon American society and government from the seventeenth century to the present.

279. *Analysis of Political Behavior.* II. 3 hr. Examines the role of science in human affairs, with particular attention to the science of politics. Topics include fact-value distinctions, objectivity, policy science, rational-choice theory, science and ethics, and non-scientific approaches.

299. *Special Topics.* I, II. 1-3 hr.

Portuguese (Port.)

1. *Elementary Portuguese.* I. 3 hr.

2. *Elementary Portuguese.* II. 3 hr.

3. *Intermediate Portuguese.* I. 3 hr. PR: Port. 1, 2, or equiv.

4. *Intermediate Portuguese.* II. 3 hr. PR: Port. 3 or equiv.

Professional Physical Education (PPE)

43. *Physical Education for Elementary Teachers.* I, II, S. 2 hr. PR: P.P.E. 41, 42, or consent. Philosophy, objectives, curriculum, and methods of teaching physical education activities for children.

45. *Football, Baseball, and Softball.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for football, baseball, and softball.

46. *Volleyball, Soccer, and Speedball.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for volleyball, soccer, and speedball.

47. *Basketball, Field Hockey, and Team Handball.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for basketball, field hockey, and team handball.

48. *Tennis, Badminton, and Golf.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for tennis, badminton, and golf.

49. *Archery, Bowling, and Fencing.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for archery, bowling, and fencing.

50. *Wrestling, Weight Training, and Track and Field.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for wrestling, weight training, and track and field.

57. *Aquatics.* I, II. 2 hr. PR: Intermediate swimming. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for aquatics.

59. *Synchronized Swimming.* I, II. 1 hr. PR: P.P.E. 57. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for synchronized swimming.

65. *Gymnastics.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for gymnastics.

66. *Advanced Gymnastics.* I, II. 2 hr. PR: P.P.E. 65. Develops cognitive, affective, and psychomotor competencies, and teaching strategies for advanced gymnastics.

67. *Introduction to Physical Education.* I, II, S. 3 hr. Examines the historical and philosophical bases, sport and movement principles, and the major issues and professional practices in physical education.

68. *Sport Officiating.* II. 2 hr. Study of officiating.

75. *Motor Learning and Development.* I, II. 2 hr. PR: Ed.P. 103 or Psych. 1 or consent. Examines the factors influencing the acquisition of motor skills and how these factors interact with the motor development process.

109. *Early Childhood Activities.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies in rhythms and games for children in early childhood.

110. *Middle Childhood Activities.* I, II. 2 hr. Develops cognitive, affective, and psychomotor competencies in rhythms and games for children in middle childhood.

121. *Sport Injury Control and Management.* I, II. 3 hr. Training, conditioning, protection, and other injury prevention measures. First aid, emergency service, and care related to physical education and athletics.

124. *Water Safety Instructorships.* I, II. 2 hr. PR: Senior Lifesaving Certification. Teaching methods in swimming and water safety. Meet American Red Cross certification standards. Course completion carries eligibility for teaching swimming, lifesaving, and water safety.

126. *Implementing Physical Education Programs, K-8.* I, II. 4 hr. PR: P.P.E. 75, and 109 or 110. Emphasis on conducting physical education in grades K-6.

127. *Movement Analysis.* 3 hr. PR: PPE 67. Introduction to the concepts of skill analysis. Application in both laboratory and clinical setting will emphasize qualitative analysis and related components and observational techniaues.

128. *Curriculum in Physical Education.* 3 hr. PR: Junior standing PE major. Examination of curricula and curriculum development; discussion of "hidden curriculum" issues.

133. *Physical Education in Grades 7-12.* I, II. 5 hr. PR: Junior standing; four courses in activity sequence; Ed. P. 103 and 105. Emphasis on conducting physical education in grades 7-12.

156. *Principles and Problems of Coaching* 3 hr. PR: Saf. S. 131 or consent. (May not be taken for both undergraduate and graduate credit.) Safety elements of automotive transportation including design, operation, planning, control, and effects of legislation.

157. *Techniques of Coaching.* I, II, S. 2 hr. PR: P.P.E. 156 or consent. (Course may be repeated.) Designed to permit students to gain athletic coaching experience through a supervised on-site experience with a varsity athletic team. (Laboratory work included.)

176. *Special Physical Education.* I, II. 2 hr. PR: P.P.E. 75, 126, 133; Conc.: P.P.E. 177. Examines motor developmental characteristics of various handicapped groups and emphasizes physical education role in remediating possible developmental deficiencies.

177. *Special Physical Education Practicum.* I, II. 1 hr. PR: P.P.E. 75, 126, 133; Conc.: P.P.E. 176. (Open to departmental majors only.) A supervised practice teaching experience in special physical education.

187. *Student Teaching: Elementary.* 4-12 hr. PR: For Physical Education undergraduates who meet eligibility requirements and other guidelines. 4-12 hr. lab.

188. *Student Teaching: Secondary.* 4-12 hr. PR: For Physical Education students enrolled in undergraduate programs who meet eligibility requirements and other guidelines. 4-12 hr. lab.

197. *Internship.* I, II, S. 1-12 hr. PR: Senior standing or consent. A student internship in selected physical education and/or sport related areas. (Graded Pass/Fail.)

198. *Special Topics.* I, II, S. 1-3 hr. PR: Consent of department chairperson. In-depth analysis of physical education subject-matter areas through an innovative course or research or field experiences not included in the major curriculum but as an adjunct to the curriculum.

218. *Gross Anatomy Lab.* 1 hr. Analysis of gross anatomy and systems of the trunk and extremities; cadaver laboratory experience.

219. *Gross Anatomy.* II. 3 hr. PR: Consent. Designed to provide an overview of body systems and gross anatomy of the trunk and extremities.

220. *Advanced Athletic Training 1.* S. 3 hr. PR: P.P.E. 121, S.E.S. 164, 165, Saf. S. 70 or consent. Designed to provide an in-depth analysis of life- threatening situations in athletics, athletic conditioning, and general rehabilitation concepts.

221. *Advanced Athletic Training 2.* I, S. 3 hr. PR: P.P.E. 121, 219, S.E.S. 164, 165, Saf. S. 70 or consent. Designed to investigate tissue repair, physiology of hot and cold treatment, therapeutic modalities and pharmacology relevant to athletic injury management.

222. *Advanced Athletic Training 3.* II, S. 3 hr. PR: P.P.E. 219, 220, 221 or consent. Designed to provide in-depth analysis of athletic injury mechanisms; injury evaluation techniques and rehabilitation; and muscle isolation techniques.

223. *Athletic Training Practicum.* II. 3 hr. PR: Consent. Designed for the practical application of athletic training techniques.

7

Psychology (Psych)

1. *Introduction to Psychology.* I, II, S. 3 hr. Survey of general psychology.

2. *Research Methods in Psychology.* I, II, S. 3 hr. PR: Psych. 1. Research methods used in experimental, developmental, clinical, and community- social psychology are studied in both the laboratory and the natural environment.

19. *Psychology As a Profession.* I, II. 1 hr. PR: Psych. 1. Orientation to opportunities for experience, employment, and graduate and professional training in psychology. (For Psychology majors only.)

25. *Psychology of Academic Self Management.* I, II. 3 hr. PR: Consent. Designed to teach students: (1) the important elements of study behavior and, (2) to develop and apply a self-management program to their academic work. Classroom instruction and practical exercises. (Does not count toward Cluster B requirements.)

101. *Leadership and Human Relations.* I, II. 3 hr. PR: Psych. 1. Concentrates on principles of psychology that can be applied to improving relations with others as well as being a more effective leader. Pragmatic orientation includes using the principles to solve problems in relationships, in small organizations, and in large systems.

131. *Organismic Factors in Psychology.* I, II. 3 hr. PR: Psych. 1, 2. An introduction to the biological factors participating in psychological events including consideration of morphology, physiology, maturation, and evolution. Interdisciplinary studies such as behavioral genetics and ethology will also be covered.

141. *Introduction to Human Development.* I, II, S. 3 hr. PR: Psych. 1. Survey of human development across the life span with an emphasis on change in physical, cognitive, and social-emotional processes. Applied problem solving by use of developmental information provides experience for service related professions such as social work, nursing, guidance, and counseling.

151. *Introduction to Social Psychology.* I, II, S. 3 hr. PR: Psych. 1. Social factors which determine human behavior. Relationships of class, race, culture, social structure, and other group phenomena to individual behavior.

164. *Personal and Social Adjustment.* I, II, S. 3 hr. PR: Psych. 1. Applications of material from personality, abnormal, clinical, and social psychology to the problems of achieving positive personality change.

170. *Sex Roles and Behavior.* I, II, S. 3 hr. PR: Psych. 1. Relates sex- typed behavior to physiological, social, and cultural processes. Current social concerns such as rape and abortion legislation, child care, and expanded career options for both sexes are examined from a psychological perspective.

171. *Behavior Principles.* I, II. 4 hr. PR: Psych. 1. Introductory survey of principles of behavior and learning and the significance of these principles for psychological theory and applications. Includes laboratory exercises and demonstrations.

190. *Teaching Practicum.* I, II, S. 1-3 hr. PR: Consent. (No more than 3 hours of Psych. 190 may be counted toward the 42 hours of psychology to which Psychology majors are limited.) Individually supervised experience in teaching, tutoring, and/or classroom management projects.

191. *Special Topics in Psychology.* I or II. 1-3 hr. PR: Consent. Contemporary topics in psychology considered at an intermediate level for both psychology majors and majors in other areas.

194. *Field Experience in Psychology.* I, II, S. 1-15 hr. PR: Consent. (No more than 15 hours of Psych. 194 may be counted toward the 128 hours required for the B.A. degree.) Individually supervised experience in the applications of psychological principles and techniques. Psychology majors have the option of including or excluding hours earned in Psych. 194 in the 42 hours of psychology to which Psychology majors are limited. The off-campus semester is offered for 15 hours of credit in this course during the first and second semesters and for 12 hours of credit during the summer. Off-campus semester placements generally require completion of Psych. 274 before enrollment in this course.

195. *Seminar in Psychology.* I or II. 3 hr. (May be repeated for credit.) PR: Junior or senior standing and consent.

196. *Senior Thesis.* I, II. 1-3 hr. PR: Consent. For students in the Psychology Honors Program.

213. *Directed Studies.* I, II, S. 1-3 hr. PR: Consent. (No more than 10 hours may be applied to the 42 hours of psychology to which Psychology majors are limited.) Individually supervised reading, research and/or classroom management projects.

218. *History and Systems of Psychology.* I, II. 3 hr. PR: 12 hr. of psychology or consent. A survey of psychology from its origins in philosophy, biology, and physics through the several major schools of psychological thought to modern perspectives of behaviors

223. *Cognition and Memory.* I. 3 hr. PR: Psych. 1, 2. Theoretical and empirical issues in human learning and memory with emphasis on mechanisms of memory, language, verbal behavior, and conceptual processes.

224. *Conditioning and Learning.* I, II. 3 hr. PR: Psych. 171. Survey of research in operant conditioning and its implications for behavior theory and applications.

225. *Perception.* I, II. 3 hr. PR: Psych. 1. A survey of the structure and function of human sensory systems (primarily visual and auditory) and perceptual issues and theories.

232. *Physiological Psychology.* I. 3 hr. PR: Psych. 1, 2. Introduction to the physiological mechanisms of behavior.

242. *Prenatal and Infant Behavior.* I. 3 hr. PR: Psych. 141. Early influences upon behavior and development are investigated; topics include behavioral genetics, hazards of prenatal development, sensory-motor development, language development, and socioemotional development.

243. *Child and Adolescent Behavior.* II. 3 hr. PR: Psych. 141. Theory and research on major psychological processes in childhood and adolescence are explored including maturation, personality, socialization, sensory, and cognitive development.

245. *Adulthood and Aging.* I. 3 hr. PR: Psych. 141. Cognitive and personality changes from maturity to old age. Psychological reactions to physiological change and to the establishment and dissolution of family units. Problems of intergenerational differences in adult behavior.

251. *Social Psychology.* II. 3 hr. PR: Psych. 1, 151. Social factors which determine human behavior. Survey of the results of laboratory research in social psychology and its implications for social phenomena.

262. *Psychological Assessment.* II. 3 hr. PR: Psych. 1. Theory and practice in development and use of psychological assessment procedures. Includes intelligence testing, behavioral assessment, and interviewing.

263. *Comparative Personality Theory.* I, II. 3 hr. PR: Psych. 1. Theoretical and empirical readings in a survey of major perspectives in personality theory, including dynamic, cognitive, humanistic, and behavioral theories of personality.

264. *Psychology of Adjustment.* II. 3 hr. PR: Psych. 1. Dynamic principles of human personality adjustment.

274. *Survey of Behavior Modification.* I, II. 3 hr. PR: Psych. 171. Behavior therapy and modification including desensitization, covert sensitization, interpersonal skill training, aversion techniques, and applied behavior analysis employing operant principles.

279. *Community Psychology.* I. 3 hr. PR: Psych. 151. Psychological principles applied to treatment and intervention strategies at the community level. Manpower development, organizational change, and systems analysis.

281. *Abnormal Psychology.* I, II. 3 hr. PR: Psych. 1. (Sophomore standing.) Major categories of behavior disorders, e.g., neuroses, psychoses, and prevention.

282. *Exceptional Children.* I, II. 3 hr. PR: Psych. 141. Study of children who present psychological problems: (1) exceptional mental retardation or advancement; (2) organic disabilities having behavioral consequences, such as cerebal palsy or deafness; and (3) behavior disorders.

297. *Honors Investigation and Thesis.* I, II. 3 hr. (May be repeated for credit; max. credit 6 hr.). PR: Admission to Honors Program in Psychology. >Supervised readings and investigation culminating in the honors thesis.

Public Administration (Pub. A.)

242. *American Administrative Systems.* I. 3 hr. Analysis of the nature and processes of American public administration (political, legal, economic, and social conditions), including the role of the bureaucracy in a democracy. (Equiv. to Pol. S. 242.)
(See *WVU Graduate Catalog* for complete listing of Public Administration courses.)

Public Relations (PR)

19. *Copy Editing and Make-Up.* I, II. 3 hr. PR: Journ. 18, PR 111. Copy editing, headline writing, handling wire copy, and make-up; emphasis on internal publications and brochures. 2 hr. lec. plus lab.

111. *Introduction to Public Relations.* I, II. 3 hr. PR: Journ.1, 15, and admission to the School or consent. Introduces the student to the principles of public relations. Definition and historical development, opportunities and challenges, techniques and management of public relations are included.

124. *Public Relations Writing/Applications.* II. 3 hr. PR: Journ. 18 and PR 19 and 111, and admission to the School, or consent. Combination lecture laboratory familiarizing students with major communication tools of the public relations practitioner. Primary emphasis on various styles of public relations writing with additional focus on applying communications tools to public relations problems through use of layout, design, graphics and desk top publishing.

222. *Public Relations Case Studies.* II. 3 hr. PR: PR 124 and Journ. 221. Seminar based on in-depth studies of public relations programs developed and applied in support of our institutions. Primary emphasis on successful campaigns, but unsuccessful efforts also will be examined for causes of failure.

Reading (Rdng.)

(Reading is primarily a service area to students in early childhood education, elementary education, secondary education, and special education. There are no specializations which an undergraduate can pursue.)
221. *Developmental Reading.* I, II, S. 3 hr. PR: Consent. Fundamentals of reading instruction. Emphasizes classroom organization and teaching techniques.

222. *Reading in the Content Areas.* I, II. 2 hr. Skills and strategies needed by content area teachers to reinforce the reading skills necessary for the effective learning of secondary students in the content areas.

240. *Corrective Language Arts Techniques.* I, II. 3 hr. PR: Rdng. 221, consent. Fundamentals of informal language arts diagnosis and corrective classroom language arts instruction. A practicum for the utilization of informal diagnosis and corrective techniques.

283. *Special Workshop in Reading.* I, II, S. 1-6 hr. For elementary and secondary students in preservice education programs, as well as elementary and secondary teachers in inservice education.

Recreation and Parks (Rc. & Pk.)

43. *Leisure and Human Behavior.* I. 3 hr. An interdisciplinary approach analyzing the role of leisure in modern American life. Play, games, work, and recreation are studied as aspects of human behavior affected by global, physical, societal, and personal concerns.

44. *Introduction to Recreation and Park Services.* II. 4 hr. An overview of recreation in modern life: its philosophy, environments, historical antecedents, service delivery systems, special settings and populations, leadership, program, and professional challenges. Includes a field placement with a local recreation agency.

142. *Fundamentals of Nature Interpretation.* II. 3 hr. PR: Recreation and parks junior or consent. Methods and techniques of interpreting the natural environment to individuals and groups.

202. *Recreation Internship.* I. 3 hr. PR: Rc. & Pk. 43, 44, 233, 235, 241, 251, 263. Supervised, full-time leadership responsibility with a recreation agency for a minimum of eight weeks. Program must relate to the student's curriculum option and must be approved in advance by the instructor.

203. *Professional Synthesis.* I, II. 3 hr. PR or Conc.: Rc. & Pk. 202. A capstone course for seniors that involves the synthesizing of professional training and field work experiences.

216. *Philosophy of Recreation.* II. 3 hr. PR: Consent. Interpretation of recreation as a basic part of the living process; importance to individual community and national welfare; social and economic significance.

226. *Leisure and Aging.* I. 3 hr. PR: Consent. Examination and analysis of leisure in middle and later stages of the lifecycle; discussion of appropriate facilities and programming for older people.

233. *Wildland Recreation Management.* I. 3 hr. PR: F. Man. 12 or consent. Topics include an analysis of administrative agencies concerned with wildland management; methods of ameliorating human impact on outdoor recreation resources; discussion of philosophies underlying wilderness recreation; and a review of contemporary controversies concerning wildlands.

234. *Wilderness in American Society.* II. 3 hr. PR: Rc. & Pk. 233 or consent. A seminar examining political, sociological, and environmental aspects of American wilderness. A discussion on articles concerning wilderness preservation, management, and aesthetics.

235. *Parks and Recreation Administration.* I. 3 hr. PR: 12 hr. of recreation and parks courses, junior standing, or consent. Principles of administration as applied to the operation of recreation and park agencies, including legal foundations, policy, organization, personnel, finance and programs of service.

238. *Tourism and Recreation Business.* 3 hr. PR: Junior standing or consent. Analysis of tourism and related recreation businesses. Resource characteristics and conflicts, marketing and development of commercial recreation enterprises. 3 hr. lec. (Offered in Fall of odd years.)

241. *Recreational Services for Special Populations.* I. 3 hr. PR: Consent. Introductory analysis of current therapeutic recreation services; attentiveness to the need for broadening recreation and park services to include members of special populations; familiarization with the planning consideration for the conduct of such services.

242. *Historical and Cultural Interpretation.* II. 3 hr. PR: Recreation and parks major or consent. Methods of locating source materials for reconstructing the historical, cultural, and physical aspects of an area for an interpretive center; preparing brochures, displays, and nature trails to facilitate interpretive activities.

248. *Environmental Concerns In Outdoor Recreation.* I. 3 hr. PR: Consent. Understanding and interpreting environmental concerns within the context of outdoor recreation.

251. *Recreation Leadership.* II. 3 hr. PR: Recreation and parks major or consent. Leadership functions and techniques, group dynamics, supervision, and use of volunteers. Theory and practice are related through a field placement with a local recreation agency.

263. *Program Planning.* II. 3 hr. PR: Recreation and parks major or consent. Fundamentals for general program planning; considers needs, facilities, age groups, local customs, climatic factors, etc. Planning involved in playgrounds, indoor centers, playfields, parks, hospitals, voluntary agencies, industry, and campus.

265. *Planning and Design of Recreation Places.* II. 3 hr. PR: Recreation and parks major or consent. Study of planning and design concepts, standards and guidelines, use continuum, grants-in-aid, and planning of selected areas and facilities: parks, pools, centers, and recreation resource areas development.

275. *Outdoor Enterprise Operations and Finance.* II. 3 hr. PR: Recreation major or junior standing. Principles and practices in planning, development, operation, and financial management of selected outdoor enterprises; considerable emphasis on assignments in problem solving. 3 hr. lec.

280. *Therapeutic Recreation Principles and Procedures.* I. 3 hr. PR: Rc. & Pk. 241 or consent. Basic intervention techniques in providing therapeutic recreation services, including individual and small group techniques, adaptive equipment, assistive techniques, standards, regulations, and ethics.

282. *Therapeutic Recreation Program Planning.* II. 3 hr. PR: Rc. & Pk. 241 or consent. Design and development of therapeutic recreation programs utilizing a systems approach based on leisure-related needs of clients. Includes assessment, program development, implementation, monitoring, and evaluation.

Religious Studies (Relig)

5. *An Introduction to Issues in Religious Studies.* I. 3 hr. (For freshman students only.) Leading issues involved in religious studies: transcendence, the God question, evil, redemption, community, eschatology, symbolism, ethics, examples of the relationship between religion and culture.

100. *Introduction to the New Testament 1.* 3 hr. Introduction to the origin and content of the Synoptic Gospels of the New Testament (Matthew, Mark, Luke). Discusses a number of basic theological issues and relates to the contemporary situation.

101. *Introduction to the New Testament 2.* 3 hr. Introduction to the life and theology of Paul, involving a study of the letters of Paul and other pertinent early Christian literature. Discusses a number of basic theological issues and constantly relates Scripture teachings to the contemporary situation.

102. *Introduction to the Old Testament.* I. 3 hr. The story of Israel, her religious life, and great personalities up to about 800 B.C., based on a study of Genesis through II Kings. Basic theological and ethical issues are discussed in relation to the contemporary situation.

103. *Introduction to the Old Testament.* II. 3 hr. The story of Israel, her religious life, and great personalities from 800 B.C. to about 100 B.C., based on a study of the prophetic and wisdom literature of the Bible. Basic theological and ethical issues are discussed in relation to the contemporary situation.

105. *Introduction to the New Testament* 3hr.. Introduction to the origin and content of the Gospel of John, the Epistles of John, and the Book of Revelation; relates basic theological issues to contemporary situation.

110. *Contemporary Theology 1.* I. 3 hr. Issues include: function of reason in Judaeo-Christian faith and relationship of reason and revelation to each other; Judaeo-Christian understanding of history; the question of Biblical literalism.

111. *Contemporary Theology 2.* II. 3 hr. Issues include: ecumenical movement within the church; the Spirit; recent transformations in ethical and social thinking (new morality); secular theology (new theology), theology of hope.

112. *Existential Theology.* I or II. 3 hr. An introduction into existentialism and its impact on theology. A dialog between existential problems (anxiety, loneliness, meaninglessness, guilt, death, lust, wrath, etc.) and the response of Judaeo-Christian faith.

120, 121. *History of Christian Thought.* I, II. 3 hr. per sem. A study of significant men and movements of thought among the Christians and the way in which these contributed to answering the perennial questions of religion from a Christian perspective. Relig. 120 covers the history of Christian thought to 1500; Relig. 121 from 1500 to the present.

122. *Origins of Judaism.* I or II. 3 hr. PR: Sophomore standing or above, or a previous religious studies course. Main beliefs and practices of the Jewish religion in its formative period, 500 B.C. to 500 A.D. Selections from late Old Testament writings, the Apocrypha and Pseudepigrapha, the Dead Sea Scrolls, and rabbinical literature.

128. *History of American Religions.* I or II. 3 hr. The origins, growth, and influence of major religious ideas and movements which were significant in shaping the religious life of the American people from colonial times to the present.

130. *World Religions: Religions of India.* I. 3 hr. PR: Sophomore standing or above, or a previous religious studies course. >Proto-Indian religion, Hinduism, beginnings of Buddhism, Jainism, Sikhism; historical and theological foundations; developments of thought; and contemporary expressions and encounters with the modern world.

131. *World Religions: China and Japan.* II. 3 hr. PR: Sophomore standing or above. Buddhism, Confucianism, Taoism, Shintoism; historical and theological foundations, developments of thought; and contemporary expressions and encounters with the modern world.

132. *World Religions: Near Eastern.* I or II. 3 hr. PR: Sophomore standing or above, or a previous religious studies course. The ancient religions of Mesopotamia, Egypt, and Iran, and the origin and growth of Islam; historical and theological foundations; developments of thought; scriptures; and contemporary expressions and encounters with the modern world.

142. *Theological Perspectives in Modern Literature.* I or II. 3 hr. PR: Sophomore standing or above, or a previous religious studies course. Theological perspectives in selected modern writers including Beckett, Camus, Faulkner, Hesse, Hopkins, Wiesel, Eliot, and Auden. Theological insights into nihilism, evil, redemption, and meaning, as well as psychological analyses of religion, will be examined in these authors. Team-taught.

150. *Biblical Ethics and Contemporary Issues.* I or II. 3 hr. Basic topics treated: principal types of ethics, sin, guilt, law, grace, the state, non- biblical ethics, etc. Ethical issues of the contemporary world: bioethics, euthanasia, environmental ethics, sex, etc.

197. *Honors Course in Religious Studies.* I or II. 3 hr. (Open to Honors students and Interdepartmental Religious Studies majors only.) A basic, theological topic, which is suitable for study by an undergraduate Honors student or by an Interdepartmental Religious Studies major, will be selected for each semester.

290. *Seminar: Selected Topic.* I or II. 3 hr. PR: A previous religious studies course or consent.

Resource Management (Res. M.)

1. *American Food and Agricultural Industry.* I. 3 hr. PR: Freshman standing or consent. Examination of the structure, function, and importance of the food and agricultural industry in the United States.

180. *Assigned Topics.* I, II. S. 1-4 hr. PR: In order to be eligible to register in Assigned Topics (Res. M. 180), the student must: (1) be in good standing, and (2) obtain approval of the Division of Resource Management before registration.

Russian (Russ.)

1. *Elementary Russian.* I. 3 hr.

2. *Elementary Russian.* II. 3 hr. Continuation of Russ. 1.

3. *Intermediate Russian.* I. 3 hr. PR: Russ. 1, 2, or equiv.

4. *Intermediate Russian.* II. 3 hr. PR: Russ. 3 or consent. Continuation of Russ. 3.

103. *Advanced Russian.* I. 3 hr. PR: Russ. 3, 4, or consent.

104. *Advanced Russian.* II. 3 hr. PR: Russ. 103 or consent.

105. *The Russian Short Story.* I. 3 hr. PR: 12 hr. of Russian or equiv.

106. *The Russian Short Story.* II. 3 hr. PR: 12 hr. of Russian or equiv. Cont. of Russ. 105.

109. *Advanced Russian.* I. 3 hr. PR: Russ. 104 or consent.

110. *Advanced Russian.* II. 3 hr. PR: Russ. 109 or consent.

144. *Survey of Russian Literature.* I. 3 hr. PR: Russ. 3, 4, or consent.

145. *Survey of Russian Literature.* II. 3 hr. PR: Russ. 144. Continuation of Russ. 144.
292. *Pro-Seminar.* I, II. 1-6 hr.* PR: 18 hr. of Russian or equiv.

Safety Studies (Saf. S.)

70. *First Aid and Emergency Care.* I, II, S. 3 hr. Emergency aid for the sick and injured. Emergency services aimed at reducing the potential of permanent disability or threats to life, as well as pain, damage, or suffering of less serious nature.

131. *Accident Prevention and Control Principles.* I, II, S. 3 hr. Basic course which structures principles, concepts, and methodology of the safety movements into introductory experiences dealing with accident prevention and control efforts recommended for various social institutions and agencies.

151. *Driver and Highway Safety Fundamentals.* II, S. 3 hr. PR: Saf. S. 131 or consent. Basic course for individuals who will provide instruction for beginning drivers which emphasize essential content, methods, and desirable practices for both classroom and laboratory applications.

231. *Safety in Motor Transportation Services.* II. 3 hr. PR: Saf. S. 131 or consent. (May not be taken for both undergraduate and graduate credit.) Safety elements of automotive transportation including design, operation, planning, control, and effects of legislation.

232. *Safety Education Principles and Content.* I. 3 hr. PR: Saf. S. 131 or consent. Study and analysis of content areas usually recommended for instructional programs within the field of safety, with emphasis on structured learning experiences.

233. *Disaster Preparedness and Emergency Systems.* 3 hr. I or II, S. Major elements involved in disasters and emergencies, preparedness planning, systems utilization, and attention to essential human services, with emphasis on community action.

234. *Establishing and Managing Fire Services.* 3 hr. I or II, S. Analysis of fire services usually provided under safety manager jurisdiction, with special attention to legal bases, organizational structure, services rendered, training needs, and management techniques.

239. *Security Management Practices and Problems.* 3 hr. I or II, S. Safety manager responsibilities for security of persons and property including organizational patterns, personnel competencies expected, surveillance and monitoring methods, and occupational problems among security personnel.

255. *Traffic Safety Management.* 3 hr. PR: Saf. S. 151 or equiv. (May not be taken for both undergraduate and graduate credit.) Elements of traffic safety management in public and private sectors are examined. Role of management organization, approaches, and programs is examined in light of the need for a safe and efficient highway transportation system. 3 hr. lec.

256. *Driver and Safety Instructional Innovations.* 3 hr. PR or Conc.: Saf. S. 151. (May not be taken for both undergraduate and graduate credit.) Innovations used in classroom and laboratory instruction applied to driver and safety education are studied (e.g., multimedia, multi-vehicle, in-vehicle, on- street, simulation). Specific aspects of instruction are based on current literature and research.

257. *Alcohol Safety Programs.* 3 hr. Topics include alcohol programming in schools, community, and the workplace. Approaches, programs, and materials are examined for use at the local level. Scientific reports are studied to determine the effectiveness of various approaches to the alcohol problem.

291. *Special Topics.* I, II, S. 2-6 hr. PR: Consent. Consideration of persistent issues and changing problems in the safety field. Seminar emphasis extends considerable attention to safety interests of participating class members.

Social Work (So. Wk.)

5. *Introduction to Social Welfare Institutions.* 3 hr. Social welfare in the United States; organized response from public and private sectors to basic human needs. 3 hr. lec.

47. *Understanding Human Diversity.* 3 hr. Cultural dynamics affecting life choices for minorities, the poor, the physically and mentally impaired, and others who experience discrimination; stigmatization, stratification, institutional racism, sexism, and social prejudice. 3 hr. lec.

51. *Introduction to Social Work.* I, II. 3 hr. (Open to sophomores.) Introductory course to learn about the profession of social work. The helper and the kinds of problems and situations with which the helper may become involved are explored.

191. *Special Topics.* 1-4 hr.

200. *Social Welfare Policy and Services.* I. 3 hr. PR: So. Wk. 51 or consent. Introduces the student to the historical background and philosophical concepts which influence the development of social welfare in America. Also, students are exposed to the specific social welfare programs and services which are utilized by the people.

210. *Social Welfare Policy and Services in Appalachia.* II. 3 hr. PR: So. Wk. 200 or consent. The second social policy course builds upon the content of the first by focusing in greater detail on the process of defining social problems, developing social policies, and implementing social provisions in the Appalachian region.

219. *Skills Lab* 1. 1 hr. Coreq.: So. Wk. 220. Interviewing, problem solving, time management, group process, empathic understanding, and attending. 1 hr. lab. (Pass/Fail Only.)

220. *Social Work Methods 1.* I. 3 hr. PR: So. Wk. 51 or consent. Theories and concepts of intervention, including prevention and rehabilitation with individuals, families, small groups, and communities are discussed. Students examine problem areas of concern to social work and various roles through which those problems can be alleviated. Emphasis on beginning skills in interviewing, observing, recording, problem identification, and analysis.

221. *Field Experience in Social Work.* II. 3 hr. PR: So. Wk. 220 or consent. (Open to selected non-majors.) Development of basic helping skills through a supervised volunteer or work experience in a community agency or program.

222. *Social Work Methods 2.* II. 3 hr. PR: So. Wk. 200, 219, and 220. Approaches for environmental intervention, prevention, and rehabilitation with groups, communities, and organizations.

223. *Skills Lab 2.* 1 hr. Coreq.: So. Wk. 222. Communication skills and problem solving with communities and organizations; identifying community resources, political and legal processes, and organizational analysis. (Pass/Fail Only.)

250. *Social Functioning and Social Work.* II. 3 hr. PR: So. Wk. 200, 220; Psych. 141; Soc. & A. 121; Biol. 166. Uses social, behavioral, and biological sciences to analyze human behavior from a social work perspective; emphasizes human differences as they affect life opportunities and meeting human needs.

282. *Independent Study.* 1-6 hr. PR: Consent.

290. *Social Work Practice Seminar.* I, II. 3 hr. PR: So. Wk. 210, 222, 223, 250; Soc. & A. 211; Coreq.: So. Wk. 291. Provides educational support for field practicum; integration and mastery of practice and theory.

291. *Field Practicum.* I, II. 6 or 12 hr. PR: So. Wk. 210, 222, 223, 250; Soc. & A. 211. Coreq.: So. Wk. 290. Educationally directed field placement in approved setting; professional application of knowledge, values, and skills to demonstrate competence as a generalist social worker. (Pass/Fail only.)

Sociology and Anthropology (Soc & A)

1. *Introduction to Sociology.* I, II, S. 3 hr. Basic course intended to develop a perspective about the nature of social processes and the structure of society.

5. *Introduction to Anthropology.* I, II, S. 3 hr. Essentials of human evolution and prehistory with a concentration on the varieties of languages and cultures found among peoples of the world. (Not open to students with credit for Soc. & A. 51.)

7. *Social Problems.* I or II. 3 hr. Causes of social disorganization in modern society and social life. Emphasis on research findings derived from studies of contemporary American society.

51. *World Cultures.* II. 3 hr. The comparative examination of contemporary peoples and cultures around the world. Examples range from small-scale, face- to-face tribal communities to folk and modern industrial societies. (Not open to students with credit for Soc. & A. 5.)

121. *The Family.* I, II. 3 hr. Comparative approach to changing structure and functions of the family institution. The effect of economic, demographic, and cultural changes on male-female relationships, sex roles, marriage, and child care.

122. *The Community.* I. 3 hr. Social structure of small towns and rural communities. The community power structure and political participation as they relate to community planning.

123. *Death and Dying.* I. 3 hr. Sociological and anthropological perspectives on death and dying. Examines sociopsychological and structural factors supporting the beliefs and practices associated with the institution of death, both historically and in contemporary society. (Graduate students enroll for Soc. & A. 323.)

125. *Illness and Health Care.* I. 3 hr. An overview of behavioral factors relating to occurrence of and responses to illness, with particular emphasis upon American medicine. Designed especially for students interested in health- related careers.

131. *Urban Society.* II. 3 hr. Ecological, demographic, and sociocultural patterns of cities and their hinterlands, including a study of racial and ethnic neighborhoods of the inner city and the process of suburbanization.

132. *Criminology.* I, S. 3 hr. Exploration of various theories of criminal behavior; emphasis on a critical study of the criminal justice system and efforts to reform the penal system. 133. Juvenile Delinquency. I. 3 hr. Nature, extent, and causal explanation of forms of juvenile deliquency. The nature of juvenile courts, the correctional system, and prevention programs. Emphasizes current issues.

134. *Corporate and White Collar Crime.* I or II. 3 hr. Examines lawbreaking by respectable organizations and individuals engaged in professional economic activity. Studies sociocultural sources of such crime, consequences for victims, and public policy responses. Includes recent criminal cases, legal changes, and enforcement trends.

135. *Race Relations.* I or II. 3 hr. Causes and consequences of prejudice and discriminatory practices involving minority group members. Emphasis is on blacks, but social and economic conditions of Indians and other racial and religious minorities are also discussed.

136. Sociology of Religion. I or II. 3 hr. Relationship of religion and society. Origin of religious institutions, structure, function, and role in change or stability of the social system.

137. *Sociology of American Business.* I or II. 3 hr. The changing role of business, and the debate over its social responsibilities are the major issues of the course. Corporate structures, ownership, governance, power, policy, crime, philanthropy, and work life are examined.

138. *Ethnic Groups.* II. 3 hr. Study of the major ethnic groups in the U.S., their social histories and present importance to the nation. Family histories are explored. Includes study of Irish, Polish, Italian, Greek, Mexican, Oriental and Native Americans.

139. *Organized Crime.* 3 hr. Analyzes organized criminal groups in relation to the social structure, culture, and social psychology of societies. Topics include: history and leadership of crime groups; relations with government, business, and labor; enforcement policies; international crime groups.

140. *Social Change in Appalachia.* II. 3 hr. Description of early Appalachian society as a prelude to the understanding of the economic, social, and cultural changes taking place today. The family, church, education, social class, and community structure. Programs of directed intervention, change, and development discussed.

152. *Physical Anthropology.* I. 3 hr. Fossil evidence for human evolution, racial variation, and relationship between biology and behavior. (Equiv. to Anat. 152.)

155. *Latin American Cultures.* I or II. 3 hr. Survey of the cultures of Mexico, Central America, and South America. Consideration of historical, social, economic, political, religious and geographic factors that impact on contemporary lifeways.

156. *Traditional and Changing Africa.* I or II. 3 hr. A survey of traditional social institutions found in hunting/collecting, agricultural, and pastoral societies of sub-Saharan Africa. Labor migration, urbanization, agricultural cooperatives, and other consequences of colonial rule will be considered.

157. *The Art of Primitive Peoples.* I or II. 3 hr. The art of prehistoric peoples from the Upper Paleolithic to the Urban Phase and the art of contemporary technologically primitive peoples will be described and functionally analyzed within their individual cultural contexts.

158. *Introduction to Archaeology.* II. 3 hr. Methods used in reconstructing prehistoric cultures. 159. World Prehistory. I or II. 3 hr. A survey of prehistoric cultures from the lower paleolithic to the rise of cities in both the old and new worlds. 3 hr. lec.

160. *Sociology of Sex Roles.* II. 3 hr. Overview of social and cultural influences on sex (gender) roles. Focuses on contemporary social arrangements and ideologies which support expected sex role behavior. Includes historical and cross-cultural comparisons.

162. *Sociology of Aging.* II. 3 hr. Social forces influencing the experience of aging, and the effects of a growing elderly population on society. Topics include changing roles and status of the elderly, intergenerational relationships, retirement traditions, widowhood.

190. *Teaching Practicum.* I, II, S. 1-3 hr.

191. *Special Topics.* I, II, S. 1-3 hr. Course topics change. Students may enroll more than once.

194. *Professional Field Experience.* I, II, S. 1-18 hr. variable. (P/F grading only). (May be repeated to a maximum of 18 hr.) PR: Consent. Experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. May involve temporary placement with public or private enterprise for professional competence development, or participation in archaeological excavation.

195. *Seminar.* I or II. 1-3 hr.

201. *Sociological Theory.* II. 3 hr. PR: 6 hr. Soc. & A. and senior standing or consent. Systematic analysis of major sociological theories viewed from the historical perspective and in terms of current research.

202. *Deviant Behavior.* II. 3 hr. PR: 6 hr. Soc. & A. or consent. Examination of the processes by which "deviance" is defined in society, and the methods of social control attempted. Provides a critical understanding of society from the perspective of those defined as "outsiders"—criminals, addicts, etc.

204. *Complex Organizations.* II. 3 hr. PR: 6 hr. Soc. & A. or consent. The structure and functioning of large-scale, bureaucratic organizations, including studies of industrial organizations, prisons, hospitals, government

205. *Class, Status, and Power.* I or II. 3 hr. PR: 6 hr. Soc. & A. or consent. Analysis of various systems of social inequality. Emphasis on empirical studies describing social class system, distribution of status and power, and patterns of social mobility in America.

211. *Social Research Methods.* I, II, S. 3 hr. PR: Soc. & A. 1 or 5 or consent. Logic of social research, elements of research design, and problems of measurement, with emphasis on survey research methodology and data analysis.

222. *Community Development.* II. 3 hr. PR: Soc. & A. 122, 133, or 140, or consent. Application of sociological knowledge of structure of communities for planning programs and services. Emphasis on techniques of organizing efforts for community change.

223. *Sociology of Rural Life.* I or II. 3 hr. PR: Soc. & A. 1 or consent. Social aspects of rural living. Characteristics of rural population, social structure, and institutional arrangements: family, community, education, religion, recreation, health, welfare, and local government.

230. *The Criminal Justice System.* II. 3 hr. PR: Soc. & A. 132 or consent. A sociological introduction to the criminal justice system. Focuses on analysis of police work, court activities, and corrections within the context of American social organization and societal definitions of crime and justice.

232. *Sociology of Education.* I. 3 hr. PR: Soc. & A. 1, or consent. Education as a social institution, cultural and class influences on education, social roles and career patterns in the school system, the school and problems of the community. Also listed as Ed.F. 300.

233. *Sociology of Work and Work Places.* I. 3 hr. PR: Soc. & A. 1 or consent. Explores the significance of work and work relations in contemporary society. Emphasis is given to the analysis of employment settings including industrial organizations.

253. *Religion, Magic, and Healing.* I. 3 hr. PR: 6 hr. Soc. & A. or consent. Symbolism, magic, ritual, shamanism, sorcery, and concepts of sin and salvation related to peasant and tribal cosmologies will be examined as causes of and remedies for suffering in traditional and modern contexts.

255. *Anthropological Theory.* II. 3 hr. PR: 6 hr. Soc. & A. or consent. Theoretical landmarks in early and modern anthropology. Includes British functionalism, psychological anthropology, French structuralism, and twentieth-century evolutionism in the United States.

258. *Anthropology of Health and Illness.* 3 hr. PR: 6 hr Soc. & A. or consent. Health and disease, diagnosis, and healing in cross-cultural perspective; analyses of social, cultural, political, and economic factors in modern and traditional medical systems.

261. *Issues in Crime and Justice.* 3 hr. PR: Senior standing, C&J track or consent. Senior seminar on crime and social organization of justice. Focus on problems of prevention, enforcement, corrections and institutional reform. Emphasis on recent research, emerging trends, and policy.

262. *Youth and Social Change.* I or II. 3 hr. PR: 6 hr. Soc. & A. or consent. A structural-historical approach to the study of youth as both product and agent of social change. Emphasizes concepts of human development, life course transition, age stratification, birth cohort, lineage, historical period, and sociocultural generation.

271. *Sociology: Mental Health and Disorder.* 3 hr. PR: 6 hr. Soc. & A. or consent. Focuses on epidemiological studies of mental disorders and stress-related illnesses. Includes mental health needs of special populations such as minorities, women, youth, elderly, Vietnam veterans, etc. Discusses mental health policies such as deinstitutionalization. 3 hr. lec.

290. *Special Topics.* I, II, S. 1-3 hr. PR: 6 hr. Soc. & A. or consent. Topics change so students may enroll more than once.

291. *Honors Seminar.* I or II. 1-3 hr.

293. *Independent Study.* I, II, S. 1-6 hr. per sem. PR: 3.0 grade-point average and written departmental permission. Directed reading or research for students desiring work not available in regular course offerings.

Spanish (Span.)

1. *Elementary Spanish.* I, II. 3 hr

2. *Elementary Spanish.* I, II. 3 hr. Continuation of Span. 1.

3. *Intermediate Spanish.* I, II. 3 hr. PR: Span. 1, 2, or equiv.

4. *Intermediate Spanish.* I, II. 3 hr. PR: Span. 3 or consent. Continuation of Span. 3.

10. *Intensive Elementary Spanish.* I. 6 hr. The equivalent of Span. 1 and 2 combined into one course.

11. *Intensive Intermediate Spanish.* II. 6 hr. PR: Span. 1 and 2 or 10 or consent. The equivalent of Span. 3 and 4 combined into one course.

33. *Intermediate Spanish: Cultural Emphasis.* I. 3 hr. PR: Span. 2 or equiv.

34. *Intermediate Spanish: Cultural Emphasis.* II. 3 hr. PR: Span. 3 or equiv. Continuation of Span. 33.

103. *Advanced Spanish.* I. 3 hr. PR: Span. 3, 4, or consent.

104. *Advanced Spanish.* II. 3 hr. PR: Span. 103 or consent.

105. *Commercial Spanish.* 3 hr. PR: Span. 104. Practical speaking, writing, and reading experience in Spanish as it relates to business, commerce, and industry.

106. *Commercial Spanish.* 3 hr. PR: Span. 105. Continuation of Span. 105.

109. *Advanced Spanish.* I. 3 hr. PR: Span. 104 or consent.

110. *Advanced Spanish.* II. 3 hr. PR: Span. 109 or consent.

116. *Civilization and Culture.* I. 3 hr. PR: 12 hr. of Spanish or equiv.

117. *Spanish-American Literature.* I. 3 hr. PR: 12 hr. of Spanish or equiv.

118. *Spanish-American Literature.* II. 3 hr. PR: 12 hr. of Spanish or equiv.

121. *Peninsular Literature Before 1800.* I. 3 hr. PR: Span. 3 and 4, or equiv., and preferably Span. 109. Reading and discussion of selections from representative works from the beginning of Spanish literature to the end of the eighteenth century together with an examination of those cultural factors which influenced the literature.

122. *Peninsular Literature Since 1800.* II. 3 hr. PR: Span. 3 and 4, or equiv., and preferably Span. 109. Readings in Spanish Peninsular literature of the Romantic, Realistic, and Naturalistic schools of the nineteenth century, the Generation of '98, and the various twenthieth-century writers down to the present day.

191. *Special Topics.* I, II. 1-4 hr.* PR: Consent.

221. *Golden Age Literature.* II. 3 hr. PR: 24 hr. of Spanish or consent. Consideration of Spanish literature of the Renaissance and the Counter Reformation with readings in the novel, the <comedia>, and lyric poetry.

223. *Estudios de Estilo.* I. 3 hr. PR: 18 hr. of Spanish or equiv.

224. *Introduccion a la literatura.* II. (Alternate Years.) 3 hr. A study of basic genres, themes, and techniques. Intensive reading of selected texts from various periods. Emphasis on Penisular and/or Spanish American Literature.

292. *Pro-Seminar.* 1-6 hr.* PR: Consent. Special topics. *Variable credit courses normally carry three hours of credit. Exceptions are made only in emergencies and must be approved by the Department Chairperson and the professor teaching the course.

Special Education (Sp. Ed.)

250. *Survey of Exceptional Children and Adults.* 3 hr. PR: Consent. Introduction to all areas of exceptionality. Definition, psychological and educational characteristics, and social and vocational adjustment.

255. *Introduction to Mental Retardation.* 3 hr. PR: Consent. Historical, etiological, social, educational, and vocational aspects of mental retardation.

260. *Curriculum and Methods for Special Education.* 3 hr. PR: Sp. Ed. 250, 255 and/or consent. Organization of instruction, adaptation of teaching methods in several curricula areas and construction of materials.

262. *Curriculum and Methods for the Trainable Mentally Retarded.* 3 hr. PR: Sp. Ed. 250, 255 and/or consent. Special problems of curriculum development for the trainable child and adult and development of original construction of curricula materials.

280. *Student Teaching Clinical Experience in Special Education.* 1-6 hr. PR: Consent. Student teaching with the mentally impaired.

281. *Special Problems and Workshop in Special Education.* 2-4 hr. PR: Consent. To take care of credits for special workshops and short intensive unit course on methods, supervision, and other special topics.

Speech Pathology and Audiology (SPA)

(Due to college curriculum review, actual course sequence and offering may differ from catalog listings. Please see program adviser.)

50. *Introduction to Speech and Hearing.* I. 3 hr. Introduction to the profession of speech pathology and audiology, with emphasis on the role identification of health professionals. Normal speech production and language development.

80. *Speech Improvement: Theory and Performance.* I, II. 3 hr. Designed for improvement of the student's speech based upon theory and demonstrated performance of voice and diction skills and public-speaking skills for effective communication in a variety of speaking situations.

132. *Introduction to Clinical Practice: Speech.* I. 2 hr. PR: SPA 50 or 250; 152; 153; 154; or consent. Routine clinical procedures in speech pathology. Clinical observations, behavioral objectives, record keeping, behavior management, cues, feedback, reinforcement, individualized treatment plans, equipment, materials, and professional ethics.

133. *Introduction to Clinical Practice: Audiology.* I. 2 hr. PR: SPA 50 or 250; 152; 153; 154; or consent. Routine clinical procedures in audiology. Observation, report writing, record keeping, equipment, and hearing testing.

152. *Basic Speech and Hearing Science.* I. 3 hr. Application of the physical and social sciences to an understanding of the role of speech production and the acoustics of sound in human communication.

153. *Phonetics.* II. 3 hr. PR: SPA 50 or consent. Standard speech sounds of the English language. Use of phonetic symbols for recording speech sounds. Classification systems presented, with emphasis on distinctive feature analysis.

154. *Anatomy of the Speech and Hearing Mechanism.* II. 3 hr. Anatomical and physiological study of the vocal mechanisms and the ear.

156. *Articulation.* II. 3 hr. PR: SPA 50. Characteristics of normal articulation development and production. Nature and etiology of articulation disorders presented. Diagnostic procedures and general goals of therapy.

210. *Manual Communication.* I, II. 3 hr. PR: Consent. Development of skills needed to communicate in sign language. The manual alphabet, basic number concepts, and the basic vocabulary of traditional American signs.

212. *Intermediate Manual Communication.* II. 3 hr. PR: SPA 210 or consent. Improve skills needed to communicate in sign language. Includes increasing sign language vocabulary, practicing fingerspelling, and communicating with signs.

218. *Introduction to Identification Audiometry.* I. 3 hr. PR: SPA 50 or 250; 152; 153; 154; or consent. Disorders of hearing and identification audiometry for infants, and pre-school and school-age children. Basic introduction to industrial hearing conservation.

223. *Aural Rehabilitation.* II. 3 hr. PR: SPA 220 or consent. Rehabilitative approaches to management in the auditorially handicapped individual. Medical, audiological, and social aspects of rehabilitation. Procedures of speech reading and auditory training will be examined and evaluated.

232. *Advanced Clinical Methods: Speech.* II. 3 hr. PR: SPA 132 or consent. Specific clinical procedures in speech pathology. Assessment and treatment strategies appropriate for various communicatively handicapped populations; report writing skills; referrals to professionals; and client-clinician- supervisor relationships.

233. *Advanced Clinical Methods: Audiology.* II. 3 hr. PR: SPA 133 or consent. Basic audiometric techniques. Pure tone testing; speech audiometry; masking; audiogram interpretation; and report writing.

243. *Audiological Assessment Procedures.* I. 4 hr. PR: Consent. Advanced application of audiometric evaluation procedures. Assessing hearing handicap and planning appropriate rehabilitation.

250. *Speech-Language-Hearing: Development-Disorders.* I, II, S. 3 hr. (For Non-majors.) PR: Consent. Discussion of normal processes and disorders of speech, language, and hearing in children and adults. Orientation course for students and teachers in early childhood, elementary, and secondary education, language arts specialists, psychologists, and rehabilitation specialists.

251. *Cleft Palate and Voice Disorders.* II. 3 hr. PR: SPA 50 or consent. Normal vocal production and embryological development of the face and palate. Nature and etiology of disorders of cleft palate and voice, diagnosis, and general goals of therapy.

252. *Stuttering.* I. 3 hr. PR: SPA 50. Development of normal fluency versus nonfluency examined in addition to the nature, etiology, theories, classification,and prognostic indicators of stuttering. General formal and informal assessment, treatment, and counseling procedures.

253. *Cerebral Palsy and Aphasia.* I. 3 hr. PR: SPA 50 or consent. Speech and language disorders related to cerebral injury, with emphasis on nature and etiology of cerebral palsy and aphasia. Diagnosis and general goals of therapy.

254. *Language Acquisition and Behavior.* I. 3 hr. Normal processes involved in the acquisition of language, including the development of phonological, semantic, and syntactical systems. Application of these processes to the diagnosis and treatment of language disorders.

257. *Public School Clinical Programs.* I. 3 hr. PR: SPA 50 or consent. Organization and structure of clinical programs in public school setting. Discussion of state and federal regulations, case selection, scheduling, program planning, and other administrative matters.

260. *Language Disorders in Children.* II. 3 hr. PR: SPA 254 or consent. Assessment and remediation procedures are examined. The utilization of current tests and analysis procedures in diagnosis are presented. Treatment approaches include commercially available programs and student-developed treatment strategies.

263. *Preschool Deaf Child.* I. 3 hr. PR: Consent. Importance of early detection and education, language development of congenitally deaf child, and parents' role in early childhood education.

265. *Parent Programs: Communicatively Disordered Children.* II. 2 hr. Students will learn to organize and implement parent involvement programs in a variety of settings, interview parents, conduct conferences, utilize appropriate materials, and interact effectively with parents of communicatively handicapped children through lectures and practica.

280. *Oral/Written Skills for Professionals.* II. 3 hr. PR: Engl. 1, 2. Designed for improvement of student's professional skills, specifically oral and written. Emphasis is placed on report writing, letter writing, resume writing, listening, interviewing, group problem solving, leadership, persuasion, and public speaking.

281. *Special Topics.* I, II, S. 1-6 hr. per sem.; (max. 6 hr.). PR: Consent. Independent study in speech pathology, audiology, and speech and hearing sciences.

282. *Clinical Practice in Speech.* I, II, S. 1-6 hr. PR: Consent. Supervised diagnosis and therapy of speech disorders.

283. *Clinical Practice in Audiology.* I, II, S. 1-6 hr. PR: Consent. Supervised diagnosis and therapy of hearing disorders.

285. *Hearing Impaired Children in Schools.* 3 hr. Audiology in the public school classroom; remediation for the hearing-impaired child.

Sport and Exercise Studies (S.E.S.)

67. *Introduction to Sport and Exercise Studies.* I, II, S. 3 hr. Examines the historical and philosophical bases, sport and movement principles, and the major issues and professional practices in physical education, and sport and exercise studies.

71. *Sport in American Society.* I, II. 3 hr. Sociocultural investigation of sport in American society.

72. *Psychological Perspectives of Sport.* I, II, S. 3 hr. An examination of personality and behavioral factors as they affect participation in sport. Topics such as stress and sport, body image, aggression and the sport participant, and the licensure of sport psychologists highlight the course.

164. *Kinesiology.* I, II. 3 hr. PR: Junior standing. Anatomical, mechanical, and musculoskeletal study of the human body as the instrument for efficient performance of motor activities. (Laboratory work included.)

165. *Physiology of Motor Activities.* I, II. 3 hr. PR: Junior standing. Human functions under stress of motor activities. (Laboratory work included.)

197. *Internship.* I, II, S. 1-12 hr. PR: Senior standing or consent. A student internship in selected agencies, businesses, and schools related to sports. (Graded Pass/Fail.)

198. *Special Topics.* I, II, S. 1-3 hr. PR: Consent of department chairperson. In-depth analysis of sport and exercise studies subject-matter areas through an innovative course or research or field experiences not included in the major curriculum but as an adjunct to the curriculum.

225. *Facility Planning.* II. 3 hr. PR: Consent. An in-depth study of sport facility planning programs, including philosophy, objectives, program development, management concepts, and evaluation.

Statistics (Stat.)

101. *Elementary Statistical Inference.* I, II. 3 hr. PR: Math. 3. (Not open to students who have completed Stat. 201.) Basic concepts of descriptive and inferential statistics; descriptive measures, random variables, sampling distributions, estimation, tests of hypotheses, chi-square tests, regression and correlation. (Equiv. to Econ. 125.)

190. *Teaching Practicum.* I, II, S. 1-4 hr. (May be repeated for a maximum of 6 hr.) PR: Stat. 212, 261. Practical classroom experience for undergraduate teaching assistants. Tasks assigned are those designed to provide experience with course design, implementation, evaluation, and revision of classroom work.

191. *Special Topics.* I, II, S. 1-6 hr. Advanced study of special topics in statistics.

195. *Field Experience.* I, II, S. 1-18 hr. PR: Stat. 262 or equiv. (Total credit applicable to any Arts and Sciences degrees may not exceed the maximum of 18 hours.) Course for those who wish to work with faculty and field supervisors to design field experiences with planned learning objectives and credit goals.

196. *Statistics Seminar.* II. 1 hr. PR: Student must be a Statistics major. Satisfactory completion of the course requires that the student present a 20- to 50-minute talk on a selected topic and attend all scheduled meetings.

197. *Statistics Practicum.* I. 1 hr. PR: Stat. 201 and C.S. 1; open to Statistics majors only. Analysis of actual experiments using a computer under supervision of a faculty member.

201. *Introduction to Probability and Statistics.* I, II. 3 hr. PR: Math. 16. Probability, random variables, discrete and continuous probability distributions, joint probability distributions, expected value. The central limit theorem. Point and interval estimation and tests of hypotheses. Chi- square tests, linear regression, and correlation.

212. *Intermediate Statistical Methods.* I, II. 3 hr. PR: Stat. 101 or 201 or equiv. Extension of basic concepts of statistical inference: estimation and hypothesis testing for more than two populations, multiple regression and correlation, curvilinear regression, analysis of variance and covariance.

213. *Introductory Design and Analysis.* II. 3 hr. PR: Stat. 212. Introduction to the linear model, the complete and fractional factorial experiment, and the completely random, randomized complete block, Latin square, and split-plot experimental designs.

221. *Statistical Analysis System (SAS).* I, II. 3 hr. PR: Stat. 101 or 201 or equiv., and C.S. 1 or equiv. Introduction to the use of the Statistical Analysis System (SAS), a statistical computer program. Students will perform statistical data analysis, data file modifications, and statistical report writing.

231. *Sampling Methods.* I. 3 hr. PR: Stat. 101 or 201 or equiv. Methods of sampling from finite populations, choice of sampling unit and sample survey design. Estimation of confidence limits and optimum sample size. Single and multistage sampling procedures.

251. *Data Analysis.* II. (Alternate Years.) 3 hr. PR: Stat. 213. Computer analyses of simulated or real unbalanced data using a matrix approach to linear models. The techniques will include least squares analysis of variance and covariance, multiple, and polynomial regression, and multiple discrimination.

261. *Theory of Probability.* I. 3 hr. PR: Math. 16. Theoretical coverage of probability, random variables, discrete and continuous probability distributions. Expected value, moment generating functions, special probability distributions. Random sampling and distributions of certain functions of random variables. The Central Limit Theorem.

262. *Theory of Statistics.* II. 3 hr. PR: Stat. 261. Theoretical introduction to statistical inference. Properties of estimators and techniques of estimation. Hypotheses testing including the Neyman-Pearson Lemma and likelihood ratio tests. Regression and correlation. Selected topics.

291. *Topics in Statistics.* I, II, S. 3 hr. PR: Stat. 201 or equiv. Advanced study of topics in statistics.

Swahili (Swah.)

1. *Beginning Swahili.* I. 3 hr

2. *Beginning Swahili.* II. 3 hr. PR: Swah. 1. Continuation of Swah. 1.

3. *Intermediate Swahili.* I. 3 hr. PR: Swah. 1, 2, or equiv.

4. *Intermediate Swahili.* II. 3 hr. PR: Swah. 3 or equiv.

Textiles and Clothing (Tx.&Cl.)

27. *Introductory Textiles.* I,II. 3 hr. Study of fibers, yarns, fabrics, methods of color application, and fabric finishing agents and processes; examination of yarn and fabric samples.

121. *Clothing in Contemporary Society.* I. 3 hr. Interdisciplinary approach to the study of clothing including cultural, historical, social, psychological, physical, economic, and aesthetic factors and their significance to the individual and to society.

124. *Apparel Construction and Fitting.* I,II. 3 hr. PR: Tx.&Cl. 27 and sophomore standing. (Textiles and Clothing and Home Economics Education majors only.) Basic principles of apparel construction, pattern alteration, and fitting. Discussion of differences in the construction of ready-to-wear and couture apparel.

126. *History of Costume.* I. 3 hr. PR: Tx.&Cl. 27, 124. History of costume from the Egyptians to the present day in relation to technological progress and social and cultural events.

127. *Textiles for Interiors.* II. 3 hr. PR: Tx.&Cl. 27. Study of textile products for commercial and residential interiors. Production techniques, construction variables, and quality factors affecting serviceability are emphasized. Federal legislation governing labeling, mandates concerning safety, and marketing strategies influencing selection are included.

194. *Fashion Merchandising Internship.* 3 hr. PR: Senior standing in Textiles and Clothing, and consent. Fashion merchandizing practices are explored through an on-site supervised work experience. Students complete an activity log and check list; conferences are held with the internship coordinator.

221. *Social/Psychological, Cultural Aspects of Dress.* I. 3 hr. PR: Tx.&Cl. 121 and senior standing or consent. Study of social, psychological, and cultural research and literature affecting clothing choices over time. Original research will be conducted by each student.

222. *Fashion Merchandising.* II. 3 hr. PR: Tx.&Cl. 121 and senior standing. Study of merchandising activities performed on the retail level including planning sales and assortments, selecting merchandise for resale, controlling inventories, and determining profit. Basic mathematical formulas involved in merchandising are practiced.

224. *Flat Pattern Design.* I, II. 3 hr. PR: Tx.&Cl. 27, 124, 126 or consent. Opportunity for creative expression and for understanding of pattern design through the flat pattern. Apparel designed and constructed by the student.

225. *Tailoring.* I,II. 3 hr. PR: Tx.&Cl. 27, 124, 224 or consent. Comparison of traditional and contemporary tailoring techniques. Student will construct a coat or jacket and skirt or pants.

226. *Apparel Design and Illustration.* II. 3 hr. PR: Tx.&Cl. 224 or consent. Art principles and fashion terminology explored in analyzing apparel design. Examination of sources of design inspiration. Techniques of drawing using a live fashion model and various media for apparel design presentation.

227. *Advanced Textiles.* I, II. 3 hr. PR: Tx.&Cl. 27, 127. Comparative characteristics of all textile fibers. Physical and chemical properties are studied with reference to fiber morphology and/or manufacturing processes.

228. *Clothing for Special Needs.* I. 3 hr. PR: Tx.&Cl. 224 or consent. Physical, psychological, and sociological clothing needs of individuals with functional limitations. Historical developments, current research, and research needs. Each student conducts a pertinent individual research project.

229. *Fashion Merchandising Study Tour.* 1 hr. PR: Senior standing in textiles and clothing. Study of the textiles and clothing industry through on-site visits to: historic costume and textile collections, apparel manufacturing plants, design showrooms, buying offices, pattern companies, and retail establishments. Readings included.

Theatre (Theat)

30. *Appreciation of Theatre.* I, II. 3 hr. (Open to all students.) Develops an appreciation and understanding of theatre as a fine art.

50. *Oral Interpretation.* I, II. 3 hr. (Open to all students.) Development of mental and emotional responsiveness to written materials. Techniques of communicating through oral reading.

51. *Fundamental Vocal Techniques.* I. 2 hr. PR: Theatre major. Concentration on the basic techniques or vocal production. International phonetic alphabet.

52. *Fundamental Vocal Techniques.* II. 2 hr. PR: Theat. 51. Cont.of Theat. 51.

71. *Fundamentals of Stage Movement.* I. 2 hr. PR: Consent. Initial training in movement for the actor. Exercises concentrating on development of spatial and self awareness.

72. *Fundamentals of Stage Movement.* II. 2 hr. PR: Theat. 71. Cont. of Theat. 71.

74. *Acting.* I, II. 3 hr. (Open to all students.) Basic theories and concepts in stage acting for the beginning student. Emphasis on the physical, intellectual, emotional, and personality languages of acting.

75. *Fundamentals of Acting.* I. 3 hr. PR: Theatre major. Fundamentals of acting. Basic process work to prepare the student for scene study.

76. *Fundamentals of Acting.* II. 3 hr. PR: Theat. 75. Continuation of Theat. 75.

95. *Basic Theatre Concepts.* II. 3 hr. Theatrical concepts based upon an examination of historical conventions and play analysis.

100. *Fundamentals of Technical Theatre.* I, II. 4 hr. Fundamentals of scenery construction and lighting through formal lecture and practical crew experience. Laboratory requirements include assignments on construction and running crews.

105. *Fundamentals of Costume Construction.* I, II. 4 hr. Fundamentals of costume construction through formal lecture and practical crew experience. Laboratory requirements include assignments on costume construction and running crews.

106. *Theatre Property Design and Construction.* I, II. 3 hr. Basic techniques in designing, building, and locating theatre properties; includes responsibility as stage prop crew on one production.

107. *Fundamentals of Theatre Lighting.* I, II. 3 hr. PR: Theat. 100, 105. Basic technique in stage lighting. Practical experience on University Theatre lighting crews.

110. *Theatre Makeup.* I, II. 3 hr. Lecture-laboratory course in art of stage makeup. Practical makeup for University Theatre productions.

151. *Intermediate Vocal Techniques.* I. 2 hr. PR: Theat. 52. Reinforcement of basic vocal techniques with special focus on the actor's individual qualities.

152. *Intermediate Vocal Techniques.* II. 2 hr. PR: Theat. 151 and consent. Continuation of Theat. 151.

161. *Sceno-Graphic Techniques.* I. 3 hr. PR: Theat. 106. Study of drafting conventions in scenery, lighting, costumes, and properties. Emphasis on problem-solving through professional presentation.

166. *Theatre Management.* 3 hr. Detailed study of the types and responsibilities of theatre managers; practical experience in box office operations, house management, and promotion for theatre productions.

167. *Theatre Design 1.* I. 3 hr. PR: Theat. 106. Study of costume and stage design through various rendering techniques.

168. *Theatre Design 2.* II. 3 hr. PR: Theat. 167. Study of theatrical design and the development of design styles through various rendering techniques.

171. *Intermediate Stage Movement.* I. 2 hr. PR: Theat. 72. Study of movement techniques focusing on use of dynamics on the stage. Continued study and development of spatial and self awareness.

172. *Intermediate Stage Movement.* II. 2 hr. PR: Theat. 171. Cont. of Theat. 171.

175. *Intermediate Acting.* I. 3 hr. PR: Theat. 76. Exercise work and fundamental techniques of scene study.

176. *Intermediate Acting.* II. 3 hr. PR: Theat. 175. Continuation of Theat. 175.

178. *Acting Studio.* II. 3 hr. PR: Consent. Continuation of the work in Theat. 177. Coordinated with rehearsal/performance.

179. *Directed Theatre Activities.* I, II. 0-3 hr. (May be repeated for max. of 6 hr. credit.) PR: Consent. Assigned theatre projects supervised by faculty.

180. *Directing.* I, II. 3 hr. Fundamentals of directing stage plays. Emphasis on the work of the director in relation to the actor, stage, business, composition, movement, and rehearsal schedule.

200. *Directed Theatre Studies.* I, II. 3-12 hr. (May be repeated for max. 12 hr. credit.) PR: Consent. Studies in theatre history, performance, stage design and technology, and theatre crafts. Subject matter and number of sections varies from semester to semester.

201. *Advanced Costume Construction.* I, II. 3-12 hr. (May be repeated for max. 6 hr. credit.) PR: Theat. 105. Study and practical application of costume construction through flat pattern, draping, and period pattern projects. Production assignments on theatre productions.

205. *Advanced Technical Theatre.* I, II. 3 hr. (May be repeated for max. 6 hr. credit.) PR: Theat. 106, 107. Detailed study of scenery construction. Research projects, drawings, technical welding, properties construction, and study of new materials. Practical experience through work on productions.

206. *Stage Management.* I, II. 3 hr. PR: Theat. 106, 107, or consent. Detailed study of the role of the stage manager. Some stage management of Division of Theatre may be required.

210. *Theatre Dance* 1. I. 2 hr. PR: Dance 9. Develops a basic practical knowledge of choreographed movement in the musical theatre dance idiom. Includes a study of fundamentals of ballet for the actor, derivative musical/rhythmic forms, and elementary Broadway dance vocabulary and styles. (Also listed as Dance 210.)

211. *Theatre Dance 2.* II. 2 hr. PR: Theat. 210/Dance 210. Comprehensive study of representative musical theatre dance styles, relative to period (1900 to present) and ethnic derivation. Includes study of isolationary movement and principles of classical dance applicable to the Broadway idiom. (Also listed as Dance 211.)

212. *Theatre Dance Repertory.* I. 2 hr. PR: Theat. 211/Dance 211. Develops and expands the technical and stylistic fundamentals established in the Dance 210-211/ Theat. 210-211 courses, applying them to reconstruction and staging of a variety of classic dance sequences from notable Broadway musicals. (Also listed as Dance 212.)

213. *Theatre Dance Performance Workshop.* II. 2 hr. PR: Theat. 212/Dance 212. Continues study of dance technique, isolationary movement and stylistic vocabularies established in previous theatre dance courses. Emphasizes development of original choreography in representative Broadway dance styles. Includes study of elements of performance in musical theatre. (Also listed as Dance 213.)

218. *Period Style for the Theatre.* 3 hr. Survey of architecture, painting, sculpture, ornamentation, and furniture as related to theatrical style from the Egyptian through Renaissance periods. Research and design projects to reinforce study of each major period. (3 hr. lec.)

219. *Period Style for the Theatre 2.* .3 hr. Survey of architecture, painting, sculpture, ornamentation and furniture as it relates to theatrical style from the Italian Baroque through the Present. Research and design projects are assigned to reinforce study of each major period. (3 hr. lec.)

220. *Costume History 1.* I. 3 hr. Detailed study of modes and manners in dress from ancient Egypt through the Renaissance.

221. *Costume History 2.* II. 3 hr. Detailed study of modes and manners in dress from the late Renaissance to the present.

223. *Costume Crafts.* II. 3 hr. PR: Theat. 105, 201. Workshops conducted by faculty members, graduate students, visiting artists, and class members, using variety of materials and techniques.

225. *Theatrical Rigging and Electricity.* II. 3 hr. PR: Theat. 100, 107. A detailed study of the rigging systems used on the stage and of electricity as it relates to stage lighting.

240. *Music Theatre Repertory.* I. (Alternate Years.) 2 hr. PR: Theatre/Dance 211, Music 41, or consent. (Open to applied music majors in voice.) Integration of acting, music, and dance through their joint application to representative sequences from standard musical theatre literature.

241. *Musical Theatre Performance.* II. (Alternate Years.) 2 hr. PR: Theat. 240 or consent. (Open to applied music majors in voice.) Continuation of Theat. 240, focusing upon student staging and development in performance of contemporary and stylized works.

242. *Musical Theatre Literature.* I. (Alternate Years.) 3 hr. PR: Consent. (Open to applied music majors in voice.) Study of standard representative musical works focusing on style.

243. *Musical Theatre Practicum.* II. (Alternate Years.) 3 hr. PR: Theat. 242 or consent. (Open to applied music majors in voice.) Independent study in musical theatre.

251. *Advanced Vocal Techniques.* I. 2 hr. PR: Consent. Concentration on vocal character demands for the stage. Dialect work. Individual tutorials.

252. *Advanced Vocal Techniques.* II. 2 hr. PR: Consent. Continuation of Theat. 251.

260. *Theatre Performance and Rehearsal Laboratory.* I, II. 1-3 hr. (May be repeated for max. 9 hr. credit.) PR: Theatre major and consent. Participation is assigned theatre projects. Appreciation of creativity and performance techniques in theatre.

262. *Scene Painting.* I. 3 hr. PR: Theat. 168 or consent. A study in the basic techniques used in preparing and painting scenery. Practical experience in painting scenery for theatre productions.

267. *Advanced Scene Design.* 3 hr. PR: Theat. 167, 168 or consent. (May be repeated for a max. 6 credit hours.) Advanced project work in scenic design emphasizing text analysis, period research and the sharpening of rendering and model-making skills toward the development of a portfolio.

268. *Advanced Costume Design.* I, II. 3 hr. PR: Th. 167, 168, 220, 221 or consent. (May be repeated for a maximum of 6 credit hours.) Advanced projects in costume design emphasizing text analysis, period research, and sharpening of skills in figure drawing, characterization and painting toward development of a portfolio. 1 hr. lec., 2 hr. lab.

269. *Advanced Theatre Lighting Design.* I, II. 3 hr. PR: Th. 107 or consent. (May be repeated for maximum 6 credit hours.) Advanced theories of lighting design for the stage. Projects emphasize text analysis for design conceptualization, light plot drafting, and practical production experience. 3 hr. lec.

271. *Advanced Stage Movement.* I. 2 hr. PR: Theat. 172. Advanced study of movement techniques for character work. Period styles of movement.

272.*Advanced Stage Movement.* II. 2 hr.PR: Theat. 271.Cont. of work in Theat. 271.

275. *Advanced Acting Studio.* I. 3 hr. PR: Consent. Continuation of advanced exercise work and styles. Coordinated with rehearsal/performance.

276. *Advanced Acting Studio.* II. 3 hr. PR: Consent. Continuation of the work in Theat. 275. Audition techniques.

278. *Repertory Theatre.* 1-6 hr. (May be repeated for max. 12 hr. credit.) PR: Consent. Rehearsal and performance techniques for producing plays in rotating repertory. Emphasis is on the creation of a synthesized company of performers, designers, and technicians.

280. *Advanced Play Directing.* II. 3 hr. PR: Theat. 180 or consent. Emphasis on the work of the director as on integrating artist. High level of proficiency in the direction of a one-act play is required of all students enrolled.

282. *Creative Dramatics.* I, II, S. 3 hr. PR: Theat. 75 or consent. Study and practice of creative dramatic activity as a method of learning and self- development for children.

284. *Puppetry.* I, II. 3 hr. PR: Theat. 75 or consent. Comprehensive survey of construction and manipulation techniques of puppets. Evaluation of the role of puppetry in child behavior and therapy techniques.

290. *Playwriting.* I, II. 3 hr. PR: Consent. Development of basic playwriting techniques. Specific assignments explore characterization, dramatic event, dialogue, tension, compression. Emphasis on the student finding one's own voice, style, and courage to dramatize one's view of the world.

291. Advanced Playwriting. II. 3 hr. PR: Theat. 290. Further exploration of dramatic technique, with emphasis on orchestrating the longer play. Also touches on script analysis of known dramatic texts and on practical problems of a playwriting career.

295. *Classic Theatre to 1700.* I. (Alternate Years.) 3 hr. A survey of theatre history, with emphasis on the development of performance conditions, from classical antiquity through the middle of the seventeenth century.

296. *European and American Theatre, 1700-1850.* II. 3 hr. A survey of theatre history, with emphasis on the development of performance conditions, from the middle of the seventeenth century to the rise of Realism in the 1840s.

297. *Modern Theatre, 1850-1940.* I. (Alternate Years.) 3 hr. A survey of theatre history, with emphasis on the development of performance conditions, from the middle of the nineteenth century to the outbreak of World War II.

298. *Contemporary Theatre Since 1940.* II. (Alternate Years.) 3 hr. A survey of theatre history, with emphasis on the development of performance conditions, from World War II to the present.

Veterinary Science (Vet. S.)

102. *Animal Pathology.* II. 3 hr. Diseases of animals, with special emphasis on the common diseases.

205. *Parasitology.* II. 3 hr. PR: Course in biology or consent. Common parasites of farm animals, their life cycles, effects on the host, diagnosis, control and public health importance. 3 hr. lec., 1 hr. lab.

210. *Principles of Laboratory Animal Science.* I. 3 hr. PR: Consent for undergraduates. The management, genetics, physiology, nutrition, disease, and germ-free quartering of common laboratory animals. 1 lab.

Wildlife Management (W. Man.)

121. *Interpretive Bird Study.* II. 3 hr. PR: Biol. 2 and 4 or consent. Intensive field studies in recognition through sight, song, and behavioral patterns of birds, and their ecology in the Central Appalachians. 2 hr. lec., 2 hr. lab.

131. *Wildlife Management.* I. 3 hr. PR: Biol. 2 and 4 <(Students majoring in wildlife management may not take this course for credit.) >Basic principles of handling wildlife as a forest crop, including population of dynamics, ecological relationships, social behavior, habitat manipulation, and game administration.

151. *Attitudes Toward Wildlife.* II. 3 hr. A consideration of our changing perception of and relationships toward wild aimals.

213. *Wildlife Ecosystem Ecology.* I. 3 hr. PR: Biol. 1 and 3, 2 and 4, and 51 or consent. Basic principles of ecosystem ecology, emphasizing structure and function, succession, adaptation of organisms to the environment (physiological ecology), and survey of major ecosystems with emphasis on their roles as wildlife habitats.

214. *Wildlife Population Ecology.* II. 3 hr. PR: W. Man. 213 or consent. Emphasis on theoretical and applied population ecology including population growth, interactions, regulation, and effects of harvesting and exploitation on natural populations. 2 hr. lec., 1 hr. lab.

224. *Vertebrate Natural History.* I. 3 hr. PR: Biol. 2 and 4 or consent. Relationships of fish, amphibians, and reptiles to the forest, with emphasis on the ecology, taxonomy, evolution, natural history, and field identification of these groups. Laboratory emphasizes natural history and anatomy of fish, amphibians, and reptiles.

225. *Mammalogy.* II. 3 hr. PR: Biol. 2 and 4 or consent. Mammals and their biological properties with emphasis on life history, ecology, and distribution of regional forms. (Also listed as Biol. 258.)

226. *Ornithology.* II. 3 hr. PR: Biol. 1 and 3, 2 and 4, or consent. Identification, distribution, and ecology of birds (particularly of forest lands). 2 hr. lec., 1 hr. lab.

228. *Wildlife Policy and Administration.* II. 3 hr. Study of the organization, authority, policies, programs and administration of public agencies and private organizations concerned with fish and wildlife. Emphasis is on the legal and political role in making wildlife management decisions.

231. *Wildlife Techniques.* I. 3 hr. PR: Wildlife major or consent; W. Man. 213, Biol. 51. Field and laboratory techniques necessary in management and study of wildlife; collection of field data, mapping, censusing, habitat evaluation, literature and scientific writing.

234. *Principles of Wildlife Management.* II. 3 hr. PR: Wildlife major or consent; W. Man. 213, 231. Major game animals and problems and principles involved in their management.

Women's Studies (Wm. St.)

40. *Introduction to Women's Studies.* I, II. 3 hr. (<May be credited to University LSP Cluster A or B.>) The major contexts in which woman's identity has been and is defined and of the relationships between these definitions and the roles and history of women (and men) in society and culture. (Also listed as MDS 40.)

191. *Special Topics.* I, II, S. 1-6 hr. PR: Consent. Interdisciplinary studies on women and gender within the humanities, social sciences, and natural sciences. Topics change from semester to semester; students can enroll more than once.

194. *Field Experience.* I, II, S. 1-6 hr. PR: Consent. Supervised interdisciplinary experiences carried out in connection with government, social service, and other approved agencies, organizations, and women-centered projects.

240. *Methods and Perspectives in Women's Studies.* I, II. 4 hr. PR: 9 hr. in approved women's studies courses and junior standing, or consent. An exploration of major theoretical perspectives on and research methods appropriate to the interdisciplinary study of women and gender.

290. *Independent Study.* I, II, S. 1-6 hr. PR: Consent. Individual study of an interdisciplinary issue in women's studies and/or gender studies.

Wood Science (Wd. Sc.)

121. *Wood Technology.* II. 3 hr. PR: Biol. 51. For students other than those taking the wood industries and wood science options; designed to provide familiarity with the technical aspects of wood utilization.

123. *Wood Identification.* I. 3 hr. PR: Wood Industry major or consent; Biol. 51. Identification of commerical timbers of the U.S.; basic properties and uses of different woods.

132. *Primary Conversion and Grading.* II. 3 hr. PR: Forestry major or consent. Principles of the conversion of raw materials in log form to primary wood products. Elements of the grading of raw materials and primary products. Production planning and control.

134. *Secondary Manufacturing Processes.* II. 3 hr. PR: Wd. Sc. 123 or consent. Detailed study of the materials and processes involved in manufacture of secondary wood products.

141. *Properties of Wood.* I. 3 hr. PR: Wood Industry major or consent; Phys. 1, Wd. Sc. 123. Physical and mechanical properties of wood.

200. *Forest Measurement Field Practice.* S. 3 hr. PR: Wood Industry major, Biol. 51, C.E. 1, F. Man. 122. Application of surveying and mensurational practices with emphasis on field problems.

201. *Wood Industries Field Trip.* S. 1 hr. PR: Wd. Sc. 134. A one-week trip to observe manufacturing methods and techniques of commerical wood industry plants. Plants visited include furniture, plywood, veneer, hardboard, particle board, pulp and paper, sawmilling, and preservation.

213. *Wood Chemistry.* 3 hr. PR: Wood Industry major or consent, and Chem. 131 or 133. Chemical composition of wood including cellulose, hemicellulose and extractives; chemical processing of wood. (2 hr. lect., 1 hr. lab.)

230. *Wood Machining.* I. 2 hr. PR: Consent. Introduction to basic concepts of wood machining with emphasis on production equipment and furniture manufacturing.

234. *Statistical Quality Control.* I. 3 hr. PR: Forestry major or consent; Wd. Sc. 134. Methods used to control quality of manufactured wood products. Control charts of variables and attributes. Acceptance sampling techniques.

235. *Light-Frame Wood Construction.* I. 2 hr. PR: Forestry major or consent. Use of wood in light-frame construction. Basic design procedures and construction methods.

237. *Wood Adhesion and Finishing.* 3 hr. PR: Wd. Sci. 141 or consent. Fundamentals of the bonding and finishing of wood including preparation, processing, and evaluation of adhesive and finishing system. (2 hr. lect., 1 hr. lab.)

240. *Wood Moisture Relationships.* II. 3 hr. PR: Wd. Sc. 123. Principles involved in the relation between wood and moisture, and purposes, effects and methods of seasoning.

251. *Forest Products Protection.* II. 3 hr. PR: Wd. Sc. 123, 134. Biological organisms responsible for deterioration of wood products, their control by preservative methods, and study of fire retarding methods.

260. *Plant Layout for Wood Industries.* II. 3 hr. PR: Senior standing. Relates knowledge of wood product processes to optimize production. Study of proper arrangement of machines, and work and storage areas.

262. *Forest Products Decision-Making.* I. 3 hr. PR: Junior standing in Forestry. Decision-making tools and techniques used by the forest products industry such as simulation-linear programming, network analysis, forecasting, game theory.

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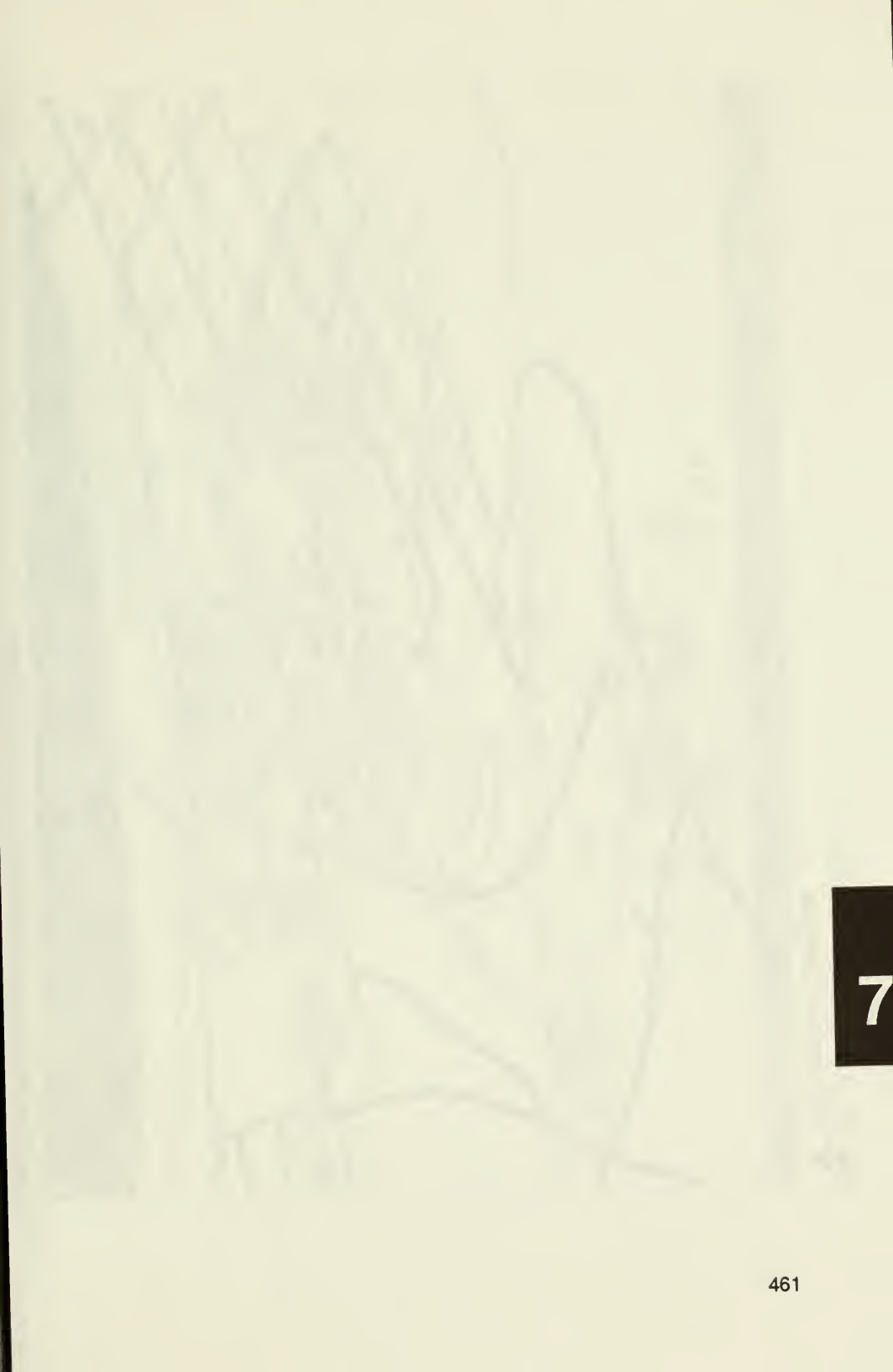

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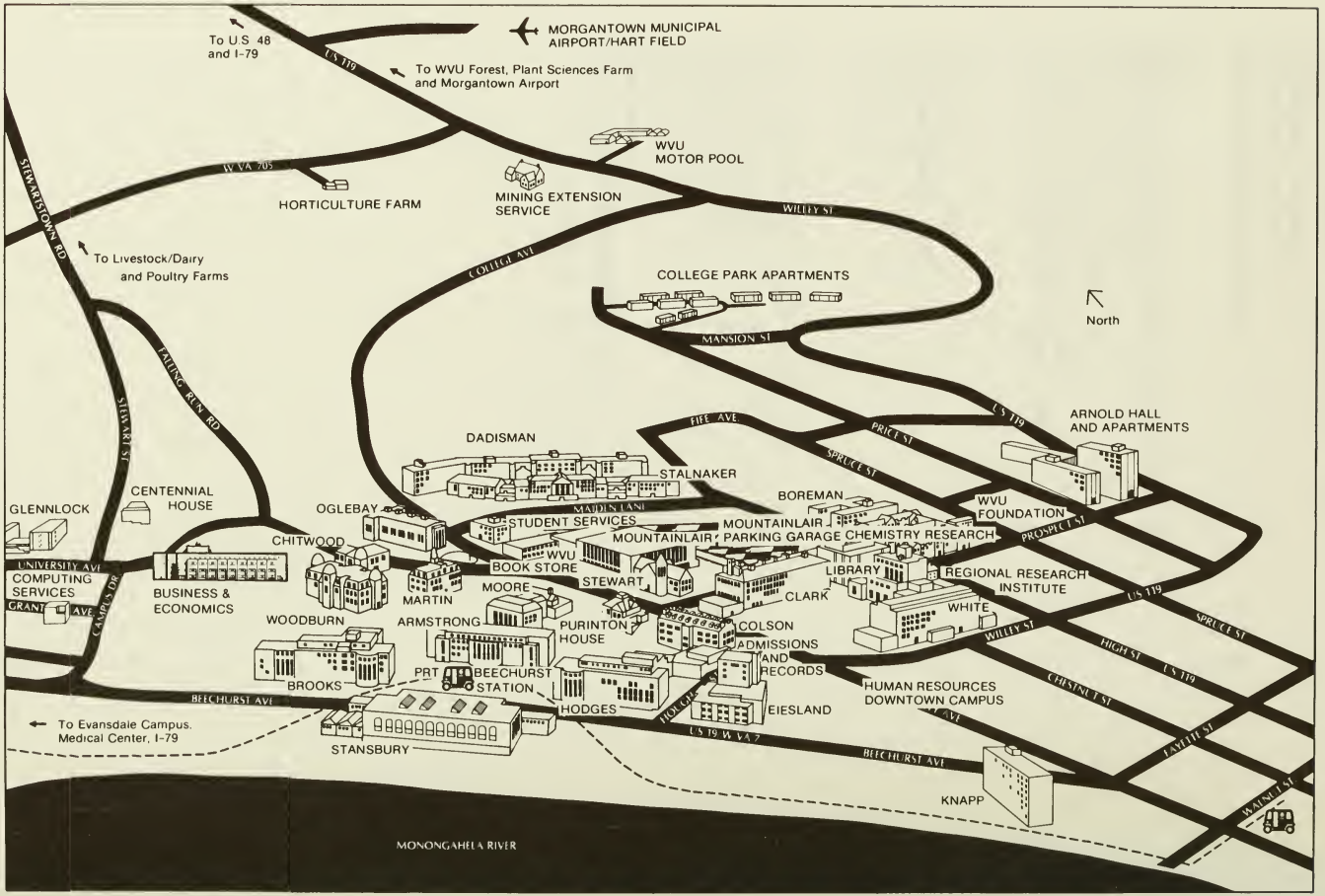

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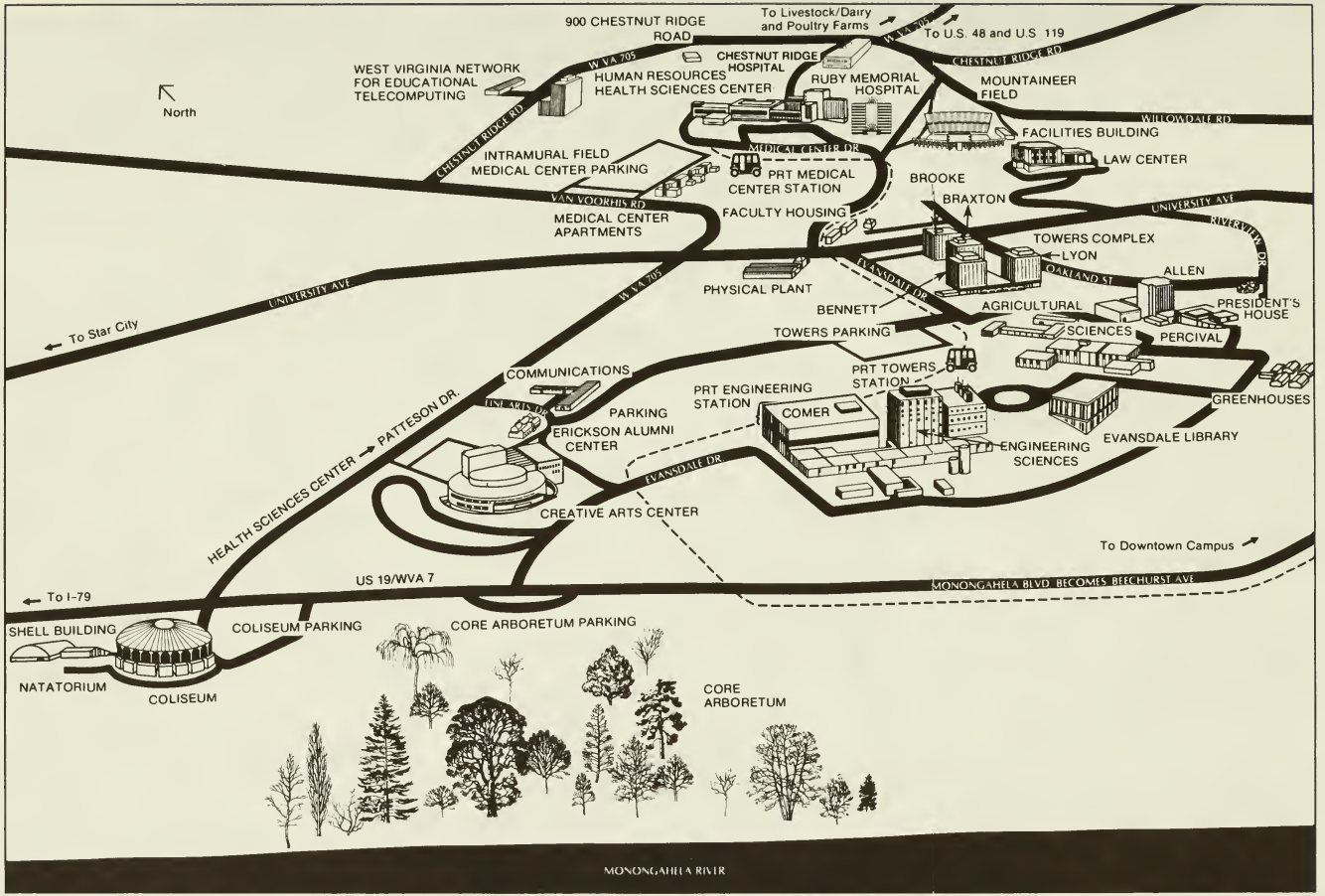

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